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Oceans and the law of the sea

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Report of the Secretary-General**

Summary

The present report has been prepared in response to the request of the General Assembly, in paragraph 78 of its resolution 58/240 of 23 December 2003, for the Secretary-General to present at the fifty-ninth session his annual comprehensive report on developments and issues relating to oceans and the law of the sea. It will be presented as a basis for discussion to the fifth meeting of the United Nations Open-ended Informal Consultative Process on Oceans and the Law of the Sea, established by the General Assembly in its resolution 54/33 of 24 November 1999 and renewed for three years in resolution 57/141, in order to facilitate the annual review of developments in ocean affairs. The fifth meeting, as decided by the General Assembly, will focus on new sustainable uses of the oceans, including the conservation and management of the biological diversity of the seabed in areas beyond national jurisdiction. The report also contains information on the status of the United Nations Convention on the Law of the Sea and its implementing Agreements, and declarations and statements made by States under articles 287, 298 and 310 of the Convention. In commemoration of the tenth anniversary of the entry into force of the Convention, the report reviews State practice with regard to maritime space, elaborates on developments in the institutions created by the Convention, as well as recent developments regarding the protection of the marine environment and the safety and security of navigation. Finally, it addresses the establishment of a mechanism for inter-agency coordination and cooperation. The report identifies two main challenges for the future: to ensure that States parties fully implement the provisions of the Convention and that inter-agency cooperation is facilitated and enhanced.

* A/59/50 and Corr.1.

** The present report was submitted after the established deadline in order to reflect the latest developments in ocean affairs and the law of the sea.

Owing to the page limit, this report contains a mere summary of the most important recent developments and selected parts of contributions by major agencies, programmes and bodies. The full texts of all contributions are posted on the web site of the Division for Ocean Affairs and the Law of the Sea: www.un.org/Depts/los.

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Abbreviations

GEF	Global Environment Facility
HELCOM	Baltic Marine Environment Protection Commission (Helsinki Commission)
IAEA	International Atomic Energy Agency
ICJ	International Court of Justice
IHO	International Hydrographic Organization
ILO	International Labour Organization
IMO	International Maritime Organization
IOC	Intergovernmental Oceanographic Commission (UNESCO)
IPOA	International Plan of Action (FAO)
IUCN	International Union for the Conservation of Nature and Natural Resources — World Conservation Union
IUU fishing	illegal, unreported and unregulated fishing
MEPC	IMO Marine Environment Protection Committee
OECD	Organisation for Economic Cooperation and Development
OSPAR Convention	Convention for the Protection of the Marine Environment of the North-East Atlantic
SAR Convention	International Convention on Maritime Search and Rescue
SOLAS	International Convention for the Safety of Life at Sea
STCW Convention	1978 International Convention on Standards of Training, Certification and Watchkeeping for Seafarers
SUA Convention	1988 Convention for the Suppression of Unlawful Acts against the Safety of Maritime Navigation
UNCTAD	United Nations Conference on Trade and Development
UNDP	United Nations Development Programme
UNEP	United Nations Environment Programme
UNESCO	United Nations Educational, Scientific and Cultural Organization
UN-Habitat	United Nations Human Settlements Programme
WHO	World Health Organization

I. Introduction

1. The date 16 November 2004 marks the tenth anniversary of the coming into force of the United Nations Convention on the Law of the Sea of 10 December 1982 ("UNCLOS" or "the Convention"). The number of parties to the Convention currently stands at 145 parties, including the European Community, of a total of 195 States. This represents considerable progress towards universality since the entry into force of the Convention, one year after the deposit of the sixtieth instrument of ratification, when there were 68 States parties. In the intervening decade, the Convention has served as the overarching legal framework for all issues and activities related to the oceans, as well as for the allocation of ocean space.

2. The year 2004 is therefore perhaps an appropriate time to review developments since November 1994, to assess the achievements of the institutions created by the Convention and to consider how the Convention has been implemented at the national level. In this context, implementation by States means, first, the incorporation of the provisions of the Convention into national legislation, either as a whole or in different laws on different subjects; second, the application of this legislation in their national administrations in practice; third, the adoption of an integrated approach to ocean affairs, as mandated by the Convention; and fourth, active cooperation in this implementation with other States — bilaterally, regionally and globally, either directly or in the context of the relevant competent organizations.

3. At the very minimum, all coastal States parties should by now have established in accordance with the Convention the baselines and the maritime zones they wish to claim and have deposited with the Secretary-General of the United Nations charts or lists of geographical coordinates showing the limits of maritime zones to which they are entitled. Where maritime boundaries have to be determined with neighbouring States, the States concerned should consider negotiating an agreement. Laws should be adopted and applied concerning such matters as: navigation, fisheries, marine scientific research, protection of the marine environment, etc. Above all, States should bear in mind that, in accordance with the preamble to the Convention, the problems of ocean space are closely interrelated and need to be considered as a whole. This holistic approach would be greatly facilitated by the development of a comprehensive and coordinated national oceans policy, such as those already adopted by a number of States. Such policies would provide guiding principles and detailed programmes to enable and encourage all government departments dealing with oceans issues to consult each other and to coordinate their work.

4. The result should be not only more effective management of the oceans at the national level, but also a uniform and consistent national position at the regional and global levels, all of which would foster better cooperation among States, as well as between international organizations addressing oceans issues, potentially leading to more integrated and effective oceans governance at the global overall.

II. The United Nations Convention on the Law of the Sea and its implementing Agreements

A. Status of the Convention and its implementing Agreements

5. As at 12 February 2004, following ratification by Canada on 7 November 2003 and accession by Lithuania on 12 November 2003, the number of States parties to the United Nations Convention on the Law of the Sea (UNCLOS), including the European Community, has risen to 145 (127 coastal States from among the total of 152 and 17 landlocked States from among the total of 42). Canada and Lithuania have also expressed their consent to be bound by the Agreement relating to the implementation of Part XI, thus increasing the number of parties to 117.

6. Despite the high number of parties, additional effort is needed in order to achieve the goal of universal participation, as called for by the General Assembly. Out of 159 original UNCLOS signatories, 29 have yet to ratify.[1] From among 38 States that did not sign UNCLOS or were not independent States at the time of its opening for signature, only 17 have acceded or succeeded to it. Many coastal States have not yet expressed their consent to be bound by the Convention: five in the African region (Republic of the Congo, Eritrea, Liberia, Libyan Arab Jamahiriya and Morocco); 10 in Asia (Cambodia, Democratic People's Republic of Korea, Iran (Islamic Republic of), Israel, Niue, Syrian Arab Republic, Thailand, Timor-Leste, Turkey and United Arab Emirates), four in Europe and North America (Denmark, Estonia, Latvia and United States of America) and six in Latin America and the Caribbean (Colombia, Dominican Republic, Ecuador, El Salvador, Peru and Venezuela). It appears, however, that in about 10 non-parties, internal procedures are under way to enable them to become parties to UNCLOS. Developing landlocked States in Africa and Central Asia should also ratify or accede to UNCLOS, as Part X of UNCLOS dealing with access to and from the sea and freedom of transit provides the basic legal framework for the negotiation of modalities of such access and transit.

7. Twenty-eight States that expressed their consent to be bound by UNCLOS prior to the adoption of the Agreement on Part XI in July 1994 and that are not yet parties to the latter should take the necessary steps in order to accede to that Agreement and thus to put their participation in the work of the International Seabed Authority on a sound legal footing.

8. In a major development, the European Community and its 15 member States[2] ratified the 1995 United Nations Fish Stocks Agreement on 19 December 2003, by depositing their respective instruments with the Secretary-General. The regime of the Agreement now extends over the high-seas areas adjacent to the exclusive economic zones (or fisheries zones) of 51 States, including certain overseas territories. In view of the benefits of a consolidated and uniform legal regime with regard to certain high seas areas and high seas fisheries, other coastal States and distant-water fishing nations, which are not yet parties, should consider expressing their consent to be bound by the Agreement.

B. Declarations and statements under articles 287, 298 and 310 of UNCLOS

9. Both Canada and Lithuania made declarations regarding the choice of procedure for the settlement of disputes concerning the interpretation or application of UNCLOS, under its article 287. Canada has chosen the International Tribunal for the Law of the Sea (ITLOS) and an arbitral tribunal constituted in accordance with Annex VII to the Convention, without specifying that one has precedence over the other. Lithuania has chosen ITLOS and the International Court of Justice.

10. With regard to article 298, paragraph 1, of UNCLOS, Canada stated that it did not accept any of the procedures provided for in Part XV, section 2, with respect to the disputes referred to in article 298, paragraph 1 (a), (b) and (c) of UNCLOS (i.e., disputes concerning the interpretation or application of articles 15, 74 and 83 relating to sea boundary delimitations, or those involving historic bays or titles, disputes concerning military activities and law enforcement activities, as well as disputes in respect of which the Security Council of the United Nations is exercising the functions assigned to it by the Charter of the United Nations).

11. With reference to articles 309 and 310 of UNCLOS, Canada also declared that it does not consider itself bound by declarations or statements that exclude or modify the legal effect of the provisions of the Convention and that lack of response by Canada to any declaration or statement shall not be interpreted as tacit acceptance of that declaration or statement.

12. In this context, it should be recalled that the General Assembly has called upon States on many occasions to harmonize their national legislation with the provisions of the Convention, to ensure that any declarations or statements that they have made or make when signing, ratifying or acceding are in conformity with the Convention and to withdraw any of their declarations or statements that are not. It is further recalled that declarations and statements generally considered not to be in conformity with articles 309 (prohibiting reservations) and 310 include: (a) those which relate to baselines not drawn in conformity with UNCLOS; (b) those which purport to require notification or permission before warships or other ships exercise the right of innocent passage; (c) those which are not in conformity with the provisions of UNCLOS relating to: (i) straits used for international navigation, including the right of transit passage; (ii) archipelagic States' waters, including archipelagic baselines and archipelagic sea-lane passage; (iii) the exclusive economic zone or the continental shelf; and (iv) delimitation; and (d) those which purport to subordinate the interpretation or application of UNCLOS to national laws and regulations, including constitutional provisions.

13. The Secretary-General has already noted that there are many declarations that contain elements not in conformity with the provisions of article 310 or not supported by any other provision of the Convention or by any rule of general international law. To date, despite the repeated appeals by the General Assembly, none of those declarations have been withdrawn.

C. Declarations and statements under article 47 of the 1995 United Nations Fish Stocks Agreement

14. Upon the deposit of their respective instruments, the European Community and its member States made declarations, pursuant to article 4 of Annex IX to the Convention and article 47 of the Agreement.[3] The European Community stated that it accepted the rights and obligations of States under the Agreement in respect of matters relating to which competence has been transferred to it by member States which are parties to the Agreement. The Agreement should apply, with regard to the competences transferred to the European Community, to the territories in which the Treaty establishing the European Community is applied, under the conditions laid down in that Treaty.

15. The Community further stated out that its member States had transferred competence to it with regard to the conservation and management of living marine resources and that, in that field, it was for the Community to adopt the relevant rules and regulations (which the member States enforce) and, within its competence, to enter into external undertakings with third States or competent organizations. This competence applies in regard to waters under national fisheries jurisdiction and to the high seas. In addition, the Community stated that it enjoyed the regulatory competence granted under international law to the flag State of a vessel to determine the conservation and management measures for marine fisheries resources applicable to vessels flying the flag of member States and to ensure that member States adopt provisions allowing for the implementation of the said measures.

16. Regarding matters within the competence of its member States, the Community declared that the following measures are within such competence: measures applicable in respect of masters and other officers of fishing vessels, measures relating to the exercise of jurisdiction by the flag State over its vessels on the high seas, in particular provisions such as those related to the taking and relinquishing of control of fishing vessels by States other than the flag State, international cooperation in respect of enforcement and the recovery of control of their vessels.

17. The Community further declared that it shares competence with its member States on the following matters: requirements of developing States, scientific research, port-State measures and measures adopted in respect of non-members of regional fisheries organizations and non-parties to the Agreement. It went on to specify the provisions of the Agreement that apply both to the Community and to its member States and, together with the member States, made a number of interpretative declarations related to the employment of terms, preservation of the freedom of the high seas, grounds for jurisdiction, application of unilateral measures, the exercise of authority by the flag State and the application and interpretation of article 21 of the Agreement. Regarding the application of that article, the European Community and its member States expressed their understanding that, when a flag State declares that it intends to exercise its authority over a fishing vessel flying its flag, the authorities of the inspecting State shall not purport to exercise any further authority under the provisions of article 21 over such a vessel. They also noted that any dispute related to this issue should be settled in accordance with the procedures provided for in Part VIII of the Agreement and that no State may invoke this type of dispute to remain in control of a vessel that does not fly its flag.

18. In addition, the European Community and its member States underlined that the use of force as referred to in article 22 constitutes an exceptional measure which must be based upon the strictest compliance with the principle of proportionality and that any abuse thereof shall imply the international liability of the inspecting State. The Community and its member States also stated that the relevant terms and conditions for boarding and inspection should be further elaborated in accordance with the relevant principles of international law in the framework of the appropriate regional and subregional fisheries management organizations and arrangements.

19. In their individual declarations, the member States recalled the transfer of competence to the Community in respect of certain matters governed by the Agreement and confirmed the declaration made by the European Community.

III. Maritime space

A. Overview of State practice, maritime claims and the delimitation of maritime zones ten years after the entry into force of the Convention

20. Ten years after the entry into force of the Convention, State practice with respect to maritime zones has shown a strong adherence to the principles and rules established by its provisions. To a large extent, the 25 coastal States non-parties to UNCLOS also accept the Convention as the source of international customary law. Current information drawn from domestic legislation and statements shows that fewer than 10 States — mostly non-parties to UNCLOS[4] — maintain a claim to the territorial sea that would extend over 12 nautical miles. This is in stark contrast to more than 140 coastal States with a territorial sea of 12 nautical miles or less, as provided for by UNCLOS, and more than 70 States that now claim a 24-nautical-mile contiguous zone in conformity with the Convention. In addition, more than 110 coastal States have proclaimed an exclusive economic zone and, for the most part, apply their sovereign rights and jurisdiction in conformity with UNCLOS. Details about maritime claims are available on the web site of the Division for Ocean Affairs and the Law of the Sea, Office of Legal Affairs.[5]

21. The process of harmonization of national legislation with UNCLOS started soon after its adoption in 1982. A publication prepared by the Division for Ocean Affairs and the Law of the Sea in 1994, entitled *The Law of the Sea — Practice of States at the time of entry into force of the United Nations Convention on the Law of the Sea*,[6] provided an account of the progress made during those 12 years in the implementation of the principles and rules embodied in the Convention. It is fair to state that State practice during the past 10 years has been no less rich and that, in many respects, positive trends were prevalent. More than 45 coastal States updated their legislation, some of them adopting a comprehensive approach and promulgating acts of substantial complexity in the form of maritime codes or ocean acts. More specifically, regarding the regime of maritime zones, legislation seems generally to be harmonized with UNCLOS provisions, in particular with respect to the regimes of passage and concerning marine resources. The deviations from UNCLOS, such as requirements for prior authorization of passage through the territorial sea or the exclusive economic zone for vessels carrying radioactive wastes or other inherently dangerous, noxious or hazardous substances, mostly relate to the

freedom of navigation. Some deviations relate also to the rights of the coastal States in relation to the protection of the marine environment in the exclusive economic zone and in relation to marine scientific research.

22. Additionally, since November 1994, more than 40 treaties and protocols to treaties on the delimitation of maritime boundaries have been concluded. Coastal States with overlapping claims have also negotiated provisional solutions of a practical nature, pending the finalization of delimitation negotiations. Certain of these arrangements were negotiated in the form of bilateral agreements; useful examples include the Timor Sea Treaty and the Agreement relating to the Unitization[7] of the Sunrise and Troubadour fields, both concluded between Australia and Timor-Leste in 2002 and 2003, respectively. Several of the maritime boundary delimitation disputes were settled by the International Court of Justice or arbitral tribunals.

23. In addition, a number of unresolved issues, related to the sovereignty over land or island territory, overlapping and extensive maritime claims and to the particular geographical predicaments of certain countries, continued to encumber relations between States with opposite and adjacent coasts, especially in the semi-enclosed and enclosed bodies of water. While in most cases such problems have not deteriorated to the extent of representing threats to peace and security, they continue to hamper meaningful cooperation in the conservation and management of fisheries, the protection and preservation of the marine environment and in combating crime at sea. Pending the resolution of these disputes through negotiation or in a court or tribunal, the Secretary-General wishes to strongly encourage the parties involved to cooperate and to enter into temporary pragmatic arrangements, such as joint fisheries zones, joint development areas or joint enforcement schemes, so that the key provisions of the international law of the sea on pollution, fisheries conservation and crime suppression and prevention do not go unenforced. Such arrangements are an important element of preventive diplomacy and confidence-building, providing a solid basis for future efforts with a view to reaching long-term solutions. Regional forums and meetings, such as the Conference on Maritime Delimitation in the Caribbean, are welcome opportunities for representatives of coastal States to exchange views and experience and to promote a better understanding of the legal and technical issues involved.

24. Most recently, the following developments have been brought to the attention of the Division:

25. *African region*. Seychelles established the outer limits of its exclusive economic zone and continental shelf by an order of 14 November 2002 (Maritime Zones (Exclusive Economic Zone and Continental Shelf) Order, 2002). In order to reach a mutually acceptable solution regarding the territorial dispute between Equatorial Guinea and Gabon (regarding sovereignty over the Mbanié, Cocotiers and Congas islands in Corsico Bay, the delimitation of maritime boundaries and the delineation of the land boundary), the two States agreed, in January 2004, to accept mediation under the auspices of the Secretary-General of the United Nations. The Secretary-General named Yves Fortier, international lawyer and former Permanent Representative of Canada to the United Nations, as mediator.

26. *Asian and South Pacific region*. France defined, by Decree No. 2002-827 of 3 May 2002, the straight baselines and closing lines of bays used to determine the

baselines from which the breadth of French territorial waters adjacent to New Caledonia is measured.

27. Following the ICJ judgment of 17 December 2002 (case concerning *Sovereignty over Pulau Litigan and Pulau Sipadan (Indonesia/Malaysia)*) and in view of the fact that Malaysia and Indonesia have yet to agree on maritime boundaries around Sipadan and Litigan islands in the Celebes Sea, the two countries agreed on provisional measures of a practical nature, such as conducting coordinated patrols in that area.

28. In recent months, world news services have reported on several unresolved disputes over island territories and their maritime spaces, such as the sovereignty disputes over the Spratlys archipelago, although some progress has already been achieved during the negotiation of the Code of Conduct on the South China Sea. In the Gulf region, news reports focused on the dispute between the Islamic Republic of Iran and the United Arab Emirates concerning the islands of Abu Musa and Greater and Lesser Tunbs, including their territorial waters, airspace, exclusive economic zones and coral reefs. Another dispute, involving the Islamic Republic of Iran, Kuwait and also Saudi Arabia, related to the resources of offshore gas fields (Arash, Al-Durra).

29. *European region*. Denmark issued Executive Order No. 680 of 18 July 2003, which amended Executive Order No. 242 of 21 April 1999 concerning the delimitation of Denmark's territorial sea.

30. *Mediterranean region*. On 3 October 2003, Croatia adopted a decision on the extension of its jurisdiction in the Adriatic Sea. Under the designation "ecological and fisheries protection zone of the Republic of Croatia", the Croatian Parliament proclaimed the content of the exclusive economic zone for the purpose of exploring and exploiting, conserving and managing the living resources beyond the outer limits of the territorial sea, as well as the jurisdiction with regard to marine scientific research and the protection and preservation of the marine environment. Croatia further reserved its right to proclaim, when it deems appropriate, the other elements of chapter IV of its Maritime Code (Exclusive Economic Zone), in accordance with UNCLOS.

31. Slovenia strongly protested the proclamation of that ecological and fisheries protection zone, expressing its view that the decision was contrary to the general obligation of Croatia under international law to refrain from any action that would prevent or hinder the final enforcement of an agreed solution concerning the border at sea between the two States. Slovenia stated that Croatia had thus prejudiced the final enforcement of a consensual solution to the issue of the maritime boundary between the two countries and had encroached on the area in which the Republic of Slovenia exercised its sovereignty and sovereign rights.

32. According to news reports, Greece and Turkey continued their consultations with respect to the continental shelf in the Aegean. Regarding the Agreement between the Republic of Cyprus and the Arab Republic of Egypt on the Delimitation of the Exclusive Economic Zone, signed on 17 February 2003 (see A/58/65/Add.1, para. 30), Turkey informed the Secretary-General of its objection to the Agreement and stated that it does not recognize it. On 19 November 2003, the Syrian Arab Republic adopted Law No. 28 dealing with the establishment and regime of its maritime zones. The Law sets the breadth of the territorial sea at 12 nautical miles,

and proclaims a 24-nautical-mile contiguous zone and an exclusive economic zone up to 200 nautical miles.

33. *Black Sea subregion*. On 24 December 2003, the Presidents of the Russian Federation and Ukraine signed the Agreement between Ukraine and the Russian Federation on Cooperation in the Use of the Sea of Azov and the Strait of Kerch and the Joint Statement by the President of Ukraine and the President of the Russian Federation on the Sea of Azov and the Strait of Kerch. In the joint statement, they confirmed their common understanding that, historically, the Sea of Azov and the Strait of Kerch are inland waters of Ukraine and the Russian Federation, and that the settlement of matters relating to that area of water should be realized by agreement between both countries in accordance with international law. According to the statement, Ukrainian and Russian military ships and trade vessels enjoy the freedom of navigation in the Sea of Azov and the Strait of Kerch; however, military ships under the flags of other States can enter the Sea of Azov and navigate through the Strait of Kerch only by an invitation of Ukraine or the Russian Federation agreed with the other State. The two countries decided to continue talks on maritime boundary delimitation in the Azov-Kerch area and on other separate agreements concerning shipping, marine ecology and fishing.

34. Also, Ukraine and Romania continued their negotiations regarding the draft intergovernmental agreement on the delimitation of their continental shelves and exclusive economic zones in the Black Sea.

35. *Caribbean region*. The second session of the Conference on Maritime Delimitation in the Caribbean was held in Mexico City on 13 and 14 October 2003 (see also A/58/65/Add.1, para. 29). The main purpose of the Conference is to provide a regional forum for facilitation of and support to bilateral negotiations regarding the delimitation of maritime boundaries, as well as a channel for technical assistance.

36. At the session, several participating States presented information on the progress in their maritime delimitation processes, which was inscribed in the Registry of the Conference. The Dominican Republic briefed the Conference about proposed amendments to its national legislation with a view to proclaiming its status as an archipelagic State. The Conference also dealt with issues related to technical assistance and its trust fund (for the status of the fund, see para. 131 below). The President of the Conference proposed that the Conference consider the possibility of declaring the Caribbean Sea a zone of peace, without prejudging the manner and the forum in which the initiative could be presented.

37. Despite the efforts of the Caribbean States to promote maritime boundary delimitation through negotiations, many disputes remain. One of the most prominent examples is the case initiated by Nicaragua against Colombia before the International Court of Justice with regard to "legal issues subsisting" between the two States "concerning title to territory" and maritime delimitation" in the western Caribbean. Nicaragua also asked the Court "to determine the course of the single maritime boundary between the areas of continental shelf and exclusive economic zone appertaining respectively to Nicaragua and Colombia, in accordance with equitable principles and relevant circumstances recognized by general international law as applicable to such a delimitation of a single maritime boundary".[9]

38. On 17 February 2004, Barbados informed the Secretary-General that, following unsuccessful efforts to negotiate the delimitation of the exclusive economic zone and continental shelf between Barbados and Trinidad and Tobago, it had decided to refer the dispute about the delimitation of those zones to the compulsory binding procedure prescribed by article 286 of UNCLOS, to which both States are parties. Barbados has also proposed that the parties should make every effort to enter into provisional arrangements of a practical nature, without prejudice to the final delimitation, relating to fishing by Barbadians to the north of the territorial sea around the island of Tobago, where Barbados maintains that it has conducted historic fishing activities.

39. On 25 February 2004, Guyana informed the Secretary-General that, having failed to reach a settlement in the dispute concerning the delimitation of its maritime boundary with Suriname, it had elected to resort to the compulsory procedures under UNCLOS and submit the dispute to the arbitral procedure provided for in Annex VII. Pending the constitution of the tribunal, Guyana has also sought provisional measures from ITLOS under article 290 of the Convention, requesting that Suriname refrain from any threat or use of armed force in the maritime zone under dispute, from any conduct in the nature of reprisals against Guyana or its nationals, from any conduct that would impede the resumption of exploration in that zone, and from any conduct that would impede the exploitation of oil deposits, subject to equitable provisional arrangements of a practical nature.

B. Issues of a general nature concerning maritime spaces

40. UNCLOS represents the primary source of the international law of the sea which clearly spells out the rights and obligations of States. There is no doubt that the provisions of the Convention are universally applicable as regards the regime of maritime zones, particularly in the sense that no international recognition must be given to maritime claims in excess of the limits allowed by these provisions and that the regime of maritime zones and jurisdiction established under national legislation must fall within their scope. Furthermore, it has been made clear by a number of States that no unilateral act, be it a declaration or national legislation, that would purport to exclude or modify the legal effect of the provisions of the Convention would be accepted, in view of the fact that UNCLOS does not allow for any reservations. It is well known that the Convention, as a product of a complex negotiating progress, represents an "ultimate package deal". Therefore, the integrity of UNCLOS, especially as regards the maritime spaces and their regime, is of the utmost importance for the maintenance of international peace and security and needs to be preserved.

41. There are some elements in recent State practice that are giving rise to concern, especially as regards geographically complicated situations. Views have been expressed that in some regions, the proclamation of certain maritime zones foreseen by UNCLOS would be contrary to certain general obligations under international law. It is the Secretary-General's belief that the rights and obligations under UNCLOS should not be region-dependent and that no additional conditions on the enjoyment by States parties of rights provided by UNCLOS should be imposed. Furthermore, States parties to UNCLOS are bound to refrain from taking actions that would prevent another State party from enjoying its rights under its provisions. UNCLOS was not negotiated to correct geographical circumstances. To

compensate partially for the latter, the Convention provides adequate remedies for situations where States are at a disadvantage, offering special provisions with respect to landlocked States, geographically disadvantaged States as well as provisions with respect to cooperation of States bordering enclosed or semi-enclosed seas.

42. Regarding implementation at the national level, another disturbing element of State practice was to proclaim a de facto exclusive economic zone under various other denominations. Although the legal regime of these zones may well be identical to the regime of an exclusive economic zone or at least not in contravention of it, the introduction of new denominations is bound to create confusion and uncertainty, especially as to the rights and obligations of other States. Such a potential confusion is entirely avoidable, since there are no legal impediments for any State party that can do so in its geographical situation to proclaim an exclusive economic zone and to use the term established in the Convention. As the entities primarily responsible for the orderly implementation of the law of the sea regime, States parties should make sure that there is no further erosion of rights and obligations, that their actions in UNCLOS implementation are sufficiently transparent and that all their bilateral problems are dealt with on the basis of UNCLOS, through means provided by it.

43. In addition, the set of rights and obligations as contained in UNCLOS should be incorporated into national legislation in a way which would satisfy general expectations as to the uniformity of the applicable legal regime in zones under national sovereignty and jurisdiction. In many countries, the implementation of UNCLOS suffers from a lack of action. In some cases, even at the national level, there is no sufficient transparency as regards the legal effects of ratification or accession with respect to the application of UNCLOS provisions. In some cases, also where constitutional rules provide for automatic incorporation of UNCLOS into domestic legislation, the authorities do not avail themselves of established means of communication to provide clarification to the international community and there might not be sufficient certainty as to their maritime claims. There are also cases when ratification or accession to UNCLOS has not been followed by appropriate legislative action and the earlier legislation has remained in force, at least technically. For example, many States continue to maintain their previous legislation on the continental shelf, which refers to the definition contained in the 1958 Geneva Convention. Therefore, for many States parties the efforts to harmonize national legislation with UNCLOS is far from having been completed. The Division stands ready to provide appropriate advice and assistance in this regard.

44. Despite a major effort to monitor developments with respect to the implementation of UNCLOS, report thereon and to maintain a comprehensive information system, the Division for Ocean Affairs and the Law of the Sea still faces considerable hurdles in fulfilling its mandate. In the past few years, the Division has undertaken several major steps to update its collection on UNCLOS and to publicize the relevant data. For example, on the occasion of the twentieth anniversary of UNCLOS, it circulated a questionnaire, which yielded a rather modest response of less than one sixth of the coastal States parties. In 2001, the Division posted on its web site the database on national legislation regarding maritime zones and maritime boundary agreements.[19] Despite encouraging comments and praise, the expected feedback from coastal States has yet to be received. Only a limited number of States, among them Finland, Ireland and Norway, have examined the site with a view to ensuring that the information is up to

date and accurate. The benefit of such a web site providing global access to these texts does not need to be emphasized. The Secretary-General would like to request the cooperation of all States in reviewing the information and ensuring that the Secretariat has access to the latest versions of their national legislation. The once honoured tradition of regular reporting by coastal States of new legislation on maritime zones to the United Nations should be revived by a concerted effort of all involved.

45. However, despite some drawbacks and persistent sovereignty and delimitation disputes, the developments of the past 10 years regarding the regime of maritime zones seem to have solidified the standing of UNCLOS and it appears that the further evolution of national jurisdiction will be firmly set on the path of compliance with that instrument.

C. Deposit and due publicity

46. The implementation of UNCLOS lags in one important area — with respect to deposit of charts and coordinates. Coastal States are required under UNCLOS to deposit with the Secretary-General of the United Nations charts showing straight baselines and archipelagic baselines as well as the outer limits of the territorial sea, the exclusive economic zone and the continental shelf. Alternatively, the lists of geographical coordinates of points, specifying the geodetic datum, may be substituted. The deposit of charts or of lists of geographical coordinates of points with the Secretary-General of the United Nations is an international act by a State party to UNCLOS in order to conform with the deposit obligations referred to above, after the entry into force of UNCLOS. This act is separate from other obligations of States such as the registration of treaties under Article 102 of the Charter of the United Nations, even though the maritime boundary delimitation treaties may contain information required by UNCLOS.

47. The objective of these provisions is clear and generally well understood: the international community and the users of the seas and oceans need to know the limits of the maritime zones in which a coastal State exercises its sovereignty or sovereign rights and jurisdiction, in view of the different legal regimes applicable. Ultimately, through the delineation of the outer limits of the continental shelf and, where appropriate, the exclusive economic zone, the international community should be able to determine the boundaries of the international seabed area (the Area), which is subject to the regime of the common heritage of mankind.

48. In view of the importance of duly published maritime limits and public interest in the availability of such information on a global basis, it is rather alarming that in the 10 years following the entry into force of UNCLOS, less than 30 coastal States parties have complied with that particular obligation, namely Argentina, Australia, Belgium, Chile, China, Costa Rica, Cyprus, Equatorial Guinea, Finland, Gabon, Germany, Honduras, Italy, Jamaica, Japan, Madagascar, Myanmar, Nauru, Netherlands, Norway, Pakistan, Papua New Guinea, Romania, Sao Tome and Principe, Seychelles, Spain, Tunisia and Uruguay. The last deposit and the only one made in the second part of 2003 was the deposit by Norway of the list of geographical coordinates of points defining the outer limits of the territorial sea around mainland Norway, Svalbard and Jan Mayen; and of points as specified in the regulations relating to the baselines. The above-mentioned States deserve credit for

their timely action, especially when, like Norway, they proceed with the deposit almost immediately after the adoption of the respective national act.

49. Overall, the situation with regard to the jurisdictional mapping of maritime limits remains unsatisfactory, due to a lack of action on the part of most coastal States parties. The Secretariat receives numerous queries concerning official maritime limits and boundaries. Considering that there is a wealth of information already available in maritime boundary delimitation treaties registered with the Secretariat under the Charter, the Secretary-General wishes to suggest that all relevant information (nautical charts or the lists of geographical coordinates of points) contained in those agreements and satisfying UNCLOS deposit requirements be considered as deposited with the Secretary-General under UNCLOS. However, the Secretary-General cannot make such a determination and, pending a decision on the subject, States parties should continue making every effort to deposit information regarding the lines of delimitation as well as baselines and the outer limits of their maritime zones as soon as practicable.

50. Another issue regarding deposit has recently emerged: the technical standards for the collection, storage and dissemination of the information deposited. Pursuant to the request of the General Assembly in its resolution 49/28 of 6 December 1994, the Division for Ocean Affairs and the Law of the Sea, as the responsible substantive unit of the United Nations Secretariat, has established facilities for the custody of charts and lists of geographical coordinates deposited and for the dissemination of such information in order to assist States in complying with their due publicity obligations. The Division has done so through various products — Maritime Zones Notifications (45 circulated so far), the Law of the Sea Information Circular (18 circulated), the Law of the Sea Bulletin (53 issues published) and its web site. However, in view of the rapidly evolving technology and the forthcoming implementation of digital (electronic) nautical charting, it would appear to be useful for the Secretariat to coordinate the development of its digital databases in a manner which would be compatible with and complementary to GIS products prepared by international and national agencies. The ultimate goal of the Division, which is by virtue of UNCLOS and General Assembly resolutions a designated custodian of information concerning baselines and maritime limits, would be to disseminate official data on the jurisdictional element in such a way that they could be seamlessly integrated into digital nautical charts, on a real-time basis. This would greatly benefit the users of the seas who are involved in navigation, fisheries and other ocean-related activities and who are naturally the most interested in the deposited information. A discussion group consisting of national experts involved in the development of digital charts could assist the Division in developing the necessary technical standards.

51. With respect to due publicity, it is recalled that, pursuant to article 21, paragraph 3, of UNCLOS, coastal States parties shall give due publicity to all laws and regulations they may adopt on innocent passage through the territorial sea and in respect of various uses and activities, such as the safety of navigation and the regulation of maritime traffic, the protection of cables and pipelines, the conservation of the living resources of the sea, the prevention of infringement of the fisheries laws and regulations of the coastal State, the preservation of the environment and the prevention, reduction and control of pollution, and marine scientific research.

52. Also, States parties bordering straits shall give due publicity to laws and regulations relating to transit passage through straits, in respect of the safety of navigation and the regulation of maritime traffic, the prevention, reduction and control of pollution, the prevention of fishing, and the loading or unloading of any commodity, currency or person in contravention of the customs, fiscal, immigration or sanitary laws and regulations of States bordering straits.

53. The Division has sought to assist States in the fulfilment of their other obligations of due publicity established by the Convention. These obligations relate to all laws and regulations adopted by the coastal State relating to innocent passage through the territorial sea (article 21 (3)) and all laws and regulations adopted by States bordering straits relating to transit passage through straits used for international navigation (article 42 (3)). Only 12 coastal States have requested the assistance of the Division in this regard, and none since 2000. Yet the Division, when undertaking its research, has discovered several cases of national acts relating to passage on which the international community seemed to have very little, if any, information.

54. The obligations of due publicity regarding sea lanes and traffic separation schemes is discharged through the mechanisms of the International Maritime Organization (IMO).

D. Access to and from the sea and freedom of transit

55. The problems related to the practical modalities of the universally recognized right of access to and from the sea and freedom of transit continued to be among the important developmental issues on the agenda of the United Nations system.

56. On 23 December 2003, the General Assembly adopted resolution 58/201, entitled "Almaty Programme of Action: Addressing the Special Needs of Landlocked Developing Countries within a New Global Framework for Transit Transport Cooperation for Landlocked and Transit Developing Countries". In the resolution, the Assembly took note of the report of the Secretary-General on the outcome of the International Ministerial Conference of Landlocked and Transit Developing Countries and Donor Countries and International Financial and Development Institutions on Transit Transport Cooperation,[11] held in Almaty on 28 and 29 August 2003, endorsed the Almaty Programme of Action[12] and called for its full and effective implementation. In a separate decision,[13] the Assembly also took note of the report prepared by the Secretary-General of the United Nations Conference on Trade and Development (UNCTAD) on the transit environment in the landlocked States in Central Asia and their transit developing neighbours (A/58/209).

57. In yet another development that was reported on recently, Bolivia raised the issue of its access to the sea at several major regional and bilateral meetings, in an attempt to start a dialogue regarding the century-old demand by Bolivia for a sovereign outlet to the Pacific Ocean coast.

IV. Institutions established by the United Nations Convention on the Law of the Sea — review of developments since 1994

A. International Seabed Authority

58. The International Seabed Authority is an autonomous international organization established under UNCLOS.[14] It is an organization through which States parties to the Convention organize and control activities in the Area, in particular with a view to administering the resources of the Area.[15] The Authority came into existence on 16 November 1994, upon the entry into force of the Convention.

59. The first substantive session of the Authority was held in three parts in 1995, and was mainly devoted to the adoption of the Rules of Procedure of the Assembly and the establishment of the Council of the Authority in accordance with the provisions of the Convention and the complex formula contained in paragraph 15, section 3, of the annex to the 1994 Agreement relating to the implementation of Part XI of the Convention (the Agreement). Upon the establishment of the Council, the list of candidates for the election of the Secretary-General of the Authority was drawn up and presented to the Assembly. The Secretary-General of the Authority was elected in March 1996 for an initial period of four years and the Authority became operational as an autonomous international organization in June 1996 when it took over the premises and facilities previously occupied by the United Nations Kingston Office for the Law of the Sea.

60. Until the end of 1997, the administrative expenses of the Authority were met from the regular budget of the United Nations. This was in accordance with section 1, paragraph 14, of the annex to the Agreement, which provides that until the end of the year following the year during which the Agreement enters into force, the administrative expenses of the Authority shall be met through the budget of the United Nations. Thereafter, the administrative expenses of the Authority shall be met by the assessed contributions of its members, including any members on a provisional basis, until the Authority has sufficient funds to meet those expenses. The Agreement entered into force on 28 July 1996.

61. The initial tasks identified for the work of the Authority included the following:[16]

- Consideration of the final report of the Preparatory Commission for the International Seabed Authority and for the International Tribunal for the Law of the Sea;
- Follow-up of the Preparatory Commission's decisions concerning the registered pioneer investors;
- Consideration of the Agreement between the Authority and Government of Jamaica regarding the headquarters of the Authority;
- Consideration of the Protocol on Privileges and Immunities of the Authority;
- Consideration of the Agreement concerning the relationship between the United Nations and the Authority;

- Transfer of the property and records of the Preparatory Commission to the Authority;
- Provisional budget and financial organizations;
- Organization of the Secretariat of the Authority.

62. Upon its request, the Authority was granted observer status at the General Assembly of the United Nations on 24 October 1996.[17] The Authority also entered into a Relationship Agreement with the United Nations in 1997.[18] The agreement establishes a mechanism for close cooperation between the two organizations to ensure effective coordination of activities and avoid unnecessary duplication of work, to facilitate cooperation on personnel arrangements, and to enable conference servicing, including translation and interpretation, on a cost-reimbursable basis.

63. One of the immediate tasks of the Authority upon its establishment was to legitimize the status of the registered pioneer investors by processing their applications for approval of plans of work for exploration in accordance with Part XI of the Convention and the Agreement, and by entering into exploration contracts with them.[19] One of the major issues during the eleventh session of the Third United Nations Conference on the Law of the Sea was the question of protection of preparatory investments in seabed mining which had already been made prior to the adoption of the Convention. Resolution II of the Final Act provided for registration of certain States and entities as pioneer investors by the Preparatory Commission, upon fulfilment of certain conditions.[20] By the final session of the Preparatory Commission, seven pioneer investors had been registered by the General Committee.[21]

64. In accordance with section 1, paragraph 6 (a) (ii), of the annex to the Agreement, a registered pioneer investor was entitled to request approval of a plan of work for exploration within 36 months of the entry into force of the Convention, that is, by 16 November 1997. Pursuant to that provision, all seven pioneer investors submitted requests for approval of their plans of work for exploration to the Secretary-General of the Authority on 19 August 1997. The Legal and Technical Commission of the Authority considered the requests for approval of the plans of work. In relation to each request, the Commission ascertained that the requirements of the Agreement had been met. The Council of the Authority, acting upon the recommendations of the Commission, then noted that in accordance with paragraph 6 (a) (ii) of section 1 of the annex to the Agreement, the plans of work for exploration submitted by the seven pioneer investors were considered to be approved and requested the Secretary-General to take the necessary steps to issue the plans of work in the form of contracts incorporating the applicable obligations under the provisions of the Convention, the Agreement and resolution II and in accordance with the regulations for prospecting and exploration for polymetallic nodules in the Area and a standard form of contract.

65. The Legal and Technical Commission prepared the draft of the regulations on prospecting and exploration for polymetallic nodules in the Area based on the earlier work done by Special Commission 3 of the Preparatory Commission as well as subsequent developments. The draft was submitted to the Council in March 1998 and after detailed examination was adopted by the Council and approved by the Assembly of the Authority on 13 July 2000.[22] Following the adoption of the regulations, during the period 2001-2002, the Authority entered into contracts with

all the seven pioneer investors. These contracts are for a period of 15 years and allow for a review of the programme of work every five years.

66. The regulations, inter alia, contain strong provisions relating to the protection and preservation of the marine environment. The contractors are obliged to take the necessary measures to prevent, reduce and control pollution and other hazards to the marine environment arising from their activities in the Area as far as reasonably possible and using the best technology available to them.[23] Pursuant to such requirements, the Authority has developed "recommendations for guidance" of contractors in assessing the potential impact upon the environment of their exploration activities.

67. In August 1998, the representative of the Russian Federation presented a request to the Authority to adopt rules, regulations, and procedures for the exploration of polymetallic sulphides and cobalt-rich ferromanganese crusts.[24] Both polymetallic sulphides and ferromanganese crusts have potentially high concentrations of metals, including copper, cobalt, nickel and zinc, and also precious metals, including gold and silver (see para. 286 below). At its ninth session, in August 2003, the Council recalled that since the request to establish regulations for the resources in question had been made in accordance with the provisions of the Convention and the Agreement, every effort should be made to formulate and consider such draft regulations in a timely manner, taking into account the need to ensure that the draft was technically sound and that the Legal and Technical Commission was given sufficient time to consider fully the difficult scientific issues involved. It was decided to keep the matter under consideration at its next session, in parallel with the ongoing formulation of the draft regulations by the Legal and Technical Commission.[25]

68. The Authority has evolved a novel method of collaboration with scientists, researchers and institutions in the collection and dissemination of data and information. The organization of series of workshops and seminars on selected specific issues allows progress to be made in a systematic manner. The Authority's workshops and meetings involve participation by internationally recognized scientists, experts, researchers and members of the Legal and Technical Commission as well as representatives of contractors, the offshore mining industry and member States. This pattern enables the collection of primary-source data and information, which is stored in the Authority's database. The proceedings of the workshops are available from the Authority.[26]

69. The Authority has also begun evaluation of available data and information relating to the reserved areas for its future use. An initial review and evaluation of available data revealed discrepancies and missing elements. The Authority therefore convened a meeting of an expert group of scientists, including some from the countries of the contractors, to draw up a preliminary proposal for the establishment of a geological model for the Clarion-Clipperton Zone. A strategy and work programme for the model was further developed during the Authority's sixth workshop, held in Nadi, Fiji, in May 2003.

70. The Authority concluded the Headquarters Agreement with the host country in August 1999. The Authority also concluded Supplementary Agreement with the host country in November 2003 on organizational matters relating to maintenance and other costs. The Protocol on Privileges and Immunities of the International Seabed Authority was adopted by the Assembly of the Authority in 1998. On 1 May 2003,

Nigeria became the tenth member of the Authority to ratify or accede to the Protocol and thus, in accordance with its article 18, paragraph 1, the Protocol entered into force on 31 May 2003. The Protocol deals with privileges and immunities of the Authority in relation to those matters which are not already covered in UNCLOS, and is complementary to the Headquarters Agreement. The Authority has adopted its own Financial Regulations, Staff Regulations and Staff Rules.[27]

B. International Tribunal for the Law of the Sea[28]

71. The International Tribunal for the Law of the Sea is an independent judicial body established by the Convention to adjudicate disputes arising out of its interpretation or application. The seat of the Tribunal is in Hamburg, Germany. The jurisdiction of the Tribunal comprises all disputes submitted to it in accordance with the Convention and the 1994 Agreement relating to the implementation of Part XI of the Convention and extends to all matters specifically provided for in any other agreement that confers jurisdiction on the Tribunal. The Tribunal is open to States parties to the Convention and, in certain cases, to entities other than States parties (such as international organizations and natural or juridical persons).

72. The Tribunal functions in accordance with the provisions contained in the Convention, its Statute (Annex VI to the Convention) and its Rules. In dealing with cases submitted to it, the Tribunal is guided by article 49 of the Rules,[29] which provides that the proceedings before the Tribunal shall be conducted without unnecessary delay or expense.

73. The Tribunal has formed the following Chambers: Chamber of Summary Procedure, Chamber for Fisheries Disputes and Chamber for Marine Environment Disputes. The Tribunal may also form a chamber to deal with a particular dispute if the parties so request. Disputes relating to activities in the international seabed area are submitted to the Seabed Disputes Chamber of the Tribunal, which was established in accordance with Part XI, section 5, of the Convention and article 14 of the Statute and consists of 11 judges.

74. Unless the parties otherwise agree, the jurisdiction of the Tribunal is mandatory in cases relating to the prompt release of vessels and crews under article 292 of the Convention and to requests for provisional measures pending the constitution of an arbitral tribunal under article 290, paragraph 5, of the Convention.

75. The Tribunal is composed of 21 independent members, elected by the States parties to the Convention from among persons enjoying the highest reputation for fairness and integrity and of recognized competence in the field of the law of the sea. The first election took place on 1 August 1996, at the fifth Meeting of States Parties.[30] Thereafter, five elections have been held in accordance with articles 5 and 6 of the Statute of the Tribunal.[31]

76. The official inauguration of the Tribunal took place in Hamburg on 18 October 1996. The host country had provided temporary premises for the Tribunal pending completion of the Tribunal's permanent premises. On 3 July 2000, the headquarters building of the Tribunal was officially opened at a ceremony held in the presence of the Secretary-General. The Headquarters Agreement between the Tribunal and Germany has not yet been concluded.

77. The budget of the Tribunal is financed by contributions from States parties to the Convention and is adopted by the Meeting of States Parties. The first budget of the Tribunal was adopted for the financial period August 1996-December 1997. Thereafter, the Tribunal's budget was prepared on an annual basis.[32] The thirteenth Meeting of States Parties adopted the Financial Regulations of the Tribunal. In accordance with the Financial Regulations, which took effect as from 1 January 2004,[33] the Tribunal will prepare biennial budgets, commencing with the financial period 2005-2006.

78. In addition to its judicial work, the Tribunal holds two administrative sessions per year to consider matters concerning the internal organization of the Tribunal, including financial, administrative and staff matters, as well as legal matters relating to its judicial functions.

79. The Tribunal enjoys observer status with the General Assembly of the United Nations and has concluded a cooperation and relationship agreement with the United Nations Secretariat. It has also concluded administrative arrangements on cooperation with several organizations or bodies.[34] On the basis of the Relationship Agreement with the United Nations, the Tribunal concluded an arrangement in 2002 with the United Nations Division for Ocean Affairs and the Law of the Sea by virtue of which the Division acts as the liaison office for the Tribunal in New York.

80. The Agreement on the Privileges and Immunities of ITLOS was adopted by the seventh Meeting of States Parties and was opened for signature at the United Nations Headquarters on 1 July 1997.[35] Thirteen states have ratified or acceded to the Agreement to date.

81. The following cases have been submitted to the Tribunal: The M/V "*SAIGA*" Case (Saint Vincent and the Grenadines v. Guinea), Prompt Release; The M/V "*SAIGA*" (No. 2) Case (Saint Vincent and the Grenadines v. Guinea); Southern Bluefin Tuna Cases (New Zealand v. Japan; Australia v. Japan), Provisional Measures; The "Camouco" Case (Panama v. France), Prompt Release; The "Monte Confurco" Case (Seychelles v. France), Prompt Release; Case concerning the Conservation and Sustainable Exploitation of Swordfish Stocks in the South-Eastern Pacific Ocean (Chile/European Community); The "Grand Prince" Case (Belize v. France), Prompt Release; The "Chaisiri Reefer 2" Case (Panama v. Yemen) Prompt Release; The MOX Plant Case (Ireland v. United Kingdom), Provisional Measures; The "Volga" Case (Russian Federation v. Australia), Prompt Release; Case concerning Land Reclamation by Singapore in and around the Straits of Johor (Malaysia v. Singapore), Provisional Measures.[36]

82. In its resolution 58/240 of 23 December 2003, the General Assembly has noted "with satisfaction the continued contribution of [the Tribunal] to the peaceful settlement of disputes in accordance with Part XV of the Convention" and has underlined "the important role and authority of the Tribunal concerning the interpretation or application of the Convention and the Agreement".

C. Commission on the Limits of the Continental Shelf

83. The Commission was established consequent to the entry into force of the Convention. Annex II to the Convention contains the provisions governing both its establishment and its functions. Those functions are: (a) to consider the data and

other material submitted by coastal States concerning the outer limits of the continental shelf in areas where those limits extend beyond 200 nautical miles, and to make recommendations in accordance with article 76 and the Statement of Understanding adopted on 29 August 1980 by the Third United Nations Conference on the Law of the Sea;[37] and (b) to provide scientific and technical advice, if requested by the coastal State concerned during preparation of such data.

84. In accordance with article 76 (8), the Commission shall make recommendations to coastal States on matters related to the establishment of the outer limits of their continental shelf beyond 200 nautical miles. The limits of the continental shelf established by a coastal State on the basis of those recommendations shall be final and binding.

85. It had been agreed at the fifth Meeting of States Parties that the election of the members of the Commission would be held in March 1997[38] to enable a number of States to complete the process of ratification.

86. The Commission held its first session in June 1997.[39] For several sessions, the Commission concentrated on producing a number of basic documents both to regulate its own procedures, and to assist coastal States in the preparation of their submissions.

87. The Commission began the development of its rules of procedure and adopted the first version in 1997 (CLCS/3). Two issues were sent to the following Meeting of States Parties for comment before the final adoption of the rules in 1998.[40] Two subsequent revisions were adopted in 1998. In May 2000, the Commission began discussions regarding the issue of confidentiality, which resulted in the issuance of the revised rules (CLCS/3/Rev.3) in February 2001.

88. The modus operandi of the Commission was drafted and adopted in 1997 at the second session (CLCS/L.3).

89. In May 2001, the internal procedures for subcommissions to follow in the examination of submissions by coastal States were adopted (CLCS/L.12).

90. Preliminary work was also begun during the second session on the Scientific and Technical Guidelines of the Commission, which were aimed at assisting coastal States in preparing their submissions regarding the outer limits of their continental shelf. The determination of these criteria involved complex technical and scientific data. In 1998, the Guidelines (CLCS/L.6) were adopted provisionally to allow for further reflection by members of the Commission and to permit comments by States. It was also agreed that, pending formal adoption at the fifth session, the Guidelines could be provisionally applied. Several States addressed letters to the Commission containing comments to the Guidelines, which were considered before the Guidelines were finalized. In May 1999, the Commission adopted the final text of the Guidelines (CLCS/11 and Add.1).

91. The Commission held an open meeting at the beginning of its seventh session in May 2000, to bring to the attention of policy makers and legal advisers the benefits the coastal States might derive from implementing the provisions of article 76 and to explain to the experts in marine sciences involved in the preparation of submissions how the Commission considered that the Guidelines should be applied in practice.

92. The publication of the basic documents prepared by the Commission, and in particular the Scientific and Technical Guidelines, were held to be of such importance to coastal States in preparing their submissions that, at the tenth Meeting of States Parties, it was decided that the date of commencement of the 10-year time period stipulated in article 4 of Annex II to the Convention for making submissions to the Commission would be 13 May 1999 for those States for which the Convention had entered into force before that date.[41] This shifted the first deadline for coastal States from 2004 to 2009.

93. Although training per se is not one of the Commission's functions, its members felt that it was important to assist coastal States, especially developing and least developed States, in preparing their submissions. Consequently the Commission has been engaged in taking such measures to standardize and facilitate matters of training as creating training modules and calling for the establishment of voluntary trust funds. In August-September 2000, the Commission finalized an outline for a training course to assist States in preparing their submissions (CLCS/24 and Corr.1), and issues related to training continue to have remained on the agenda of subsequent sessions of the Commission.

94. On 20 December 2001, the Russian Federation made its submission to the Commission, the first to be received since its establishment in 1997. The submission contained data and other information on the outer limits of the continental shelf beyond 200 nautical miles proposed by the Russian Federation in the Central Arctic Ocean, in the Barents and Bering seas and in the Sea of Okhotsk.

95. The Secretary-General circulated a communication to all Member States of the United Nations to make public the coordinates of the proposed outer limits of the continental shelf pursuant to the submission of the Russian Federation. In response to the note verbale, communications were received from Canada, Denmark, Japan, Norway and the United States of America.

96. The contents of these communications were circulated to all member States and were communicated to the Commission at its tenth session in March/April 2002. The main item on the agenda of the session was the consideration of the submission by the Russian Federation. The plenary of the Commission met from 25 to 28 March, during which a subcommission was established to consider the submission and to prepare the recommendations of the Commission. The subcommission met from 28 March to 12 April and decided to continue its deliberations from 10 to 14 June, pending receipt of additional information requested from the Russian Federation regarding its submission. The recommendations of the subcommission were forwarded through the Secretariat to the Commission at its eleventh session, which was held from 24 to 28 June 2002.

97. In view of the impending expiration of the first five-year term of the Commission on 15 June 2002, the election of the 21 members of the Commission was on 23 April 2002, at the twelfth Meeting of States Parties to the Convention.[42] The eleventh session marked the inauguration of the five-year term of office of the newly elected membership of the Commission. After some amendments, the recommendations of the Commission as submitted by the subcommission were adopted by the Commission by consensus and were submitted to the Russian Federation and to the Secretary-General.

98. At its twelfth session (28 April-2 May 2003), the Commission dealt with issues of the consolidation of the rules of procedure, issues of confidentiality in the consideration of a submission and the contents of recommendations made by the Commission to coastal States as well as with matters related to advice to coastal States and training.

99. The thirteenth session of the Commission is scheduled to be held from 26 to 30 April 2004. Since no submission from a coastal State was received by the Commission in time to be considered at that session in accordance with its rules of procedure, the session will not be followed by a meeting of a subcommission. The fourteenth session of the Commission will be held from 30 August to 3 September 2004. If a submission is received in time to be considered at that session, it would be followed by two weeks of meetings of a subcommission.

100. The Commission will continue with its review of its procedural and organizational documents with a view to aligning their provisions. At its most recent session, the Commission decided that provisions of an operational nature contained in the modus operandi of the Commission (CLCS/L.3) would be combined with the internal procedure of the subcommission (CLCS/L.12) into one document, with editorial improvements. The rules of procedure of the Commission will be retained as a separate document (CLCS/3/Rev.3 and Corr.1).

101. Another decision taken by the Commission at its most recent session with a view to increasing the transparency of its work was to include in its recommendations an executive summary, containing a general description of the extended continental shelf, as well as a set of coordinates and illustrative charts, if appropriate, to identify the line describing the outer limits recommended by the Commission. The Commission felt that that might respond, at least in part, to the concerns of some interested parties regarding factual information about the scientific data and material contained in the submissions, as well as the basis of the analysis carried out by the Commission in applying the requirements of article 76 of UNCLOS.

102. In accordance with the provisions of article 3, paragraph 1 (b), of Annex II to the Convention, under which the Commission is mandated to provide scientific and technical advice to States in the process of preparing their submissions if so requested, the Commission has indicated its readiness to provide such advice if needed. Information regarding this function of the Commission may be obtained from the Commission's web page on the web site of the Division at www.un.org/Depts/los/clcs_new/clcs_home.htm.

103. To further assist States in preparing a submission in respect of the outer limits of the continental shelf, a training manual is in the process of being prepared by the Division for Ocean Affairs and the Law of the Sea in conjunction with two coordinators, who are members of the Commission. It is anticipated that the manual will be published as a United Nations sales publication.

104. In response to a note verbale from the Division addressed to interested coastal States requesting them to indicate the projected timing of their submission to the Commission to allow the Division to make appropriate preparations for their receipt and examination, three States have informed the Secretariat that their submissions are expected to be completed within the next three years. Ireland intends to submit its information regarding the outer limits of its continental shelf beyond 200 nautical

miles in 2005, Pakistan in 2007/08, and Sri Lanka in 2007. Two other States have replied, indicating that the process of preparing their submission is under way, but that they are unable to project a date for completion at the current stage.

105. In October 2000, a trust fund was established by the General Assembly (resolution 55/7) for the purpose of facilitating the preparation of submissions to the Commission. Candidates from six developing countries have been sent to training courses based on the outline for a five-day training course designed by the Commission (CLCS/24), and seven developing countries have requested assistance from the Fund to enable their nationals to be sent to a similar training course to be offered by the Southampton Oceanography Centre, United Kingdom, from 10 to 14 May 2004.

106. The General Assembly amended the terms of reference of the Fund in December 2003 (resolution 58/240, annex) to allow monies to be used to pay directly to States and institutions such expenses as transportation, tuition and per diem for successful applicants, instead of requiring Governments to pay all expenses first. The changes in the procedure have not, however, altered the requirement under the Trust Fund terms of reference that all proposed expenditures must be pre-approved by the Division.

107. As of the end of 2003, the Fund had total expenditures or unliquidated obligations of almost $60,000, and assets of $1,137,053 (see para. 129).

108. Information on all forms of activities which are the subject of the Fund, as well as an application form for requesting funds for training purposes from recognized institutions, may be found on the web site of the Division at www.un.org/Depts/los/clcs_new/trust_fund_article76.htm.

109. As regards the Trust Fund for the purpose of defraying the cost of participation of the members of the Commission from developing States in the meetings of the Commission, which was also established by the General Assembly in its resolution 55/7, two developing States were sponsored to send members to attend the twelfth session of the Commission, and one has applied to attend the April 2004 session.

V. Capacity-building

A. Overview

110. Since the entry into force of UNCLOS in 1994, the concept of capacity-building — crystallized two years earlier in Agenda 21 at the United Nations Conference on Environment and Development — has gained increasing relevance among the central operational concerns of the United Nations system. However, the concept itself represents the end-point in the evolution of the numerous development-cooperation and technical-assistance activities already carried out by the United Nations. UNCLOS, for instance, contains at least 25 references to the need to help developing States and to take their concerns into account. Such references range from marine scientific research and transfer of technology to activities in the Area and the problems of the marine environment.[43] Similarly, numerous General Assembly resolutions that pre-date Agenda 21[44] touched upon activities that can be classified as capacity-building.

111. Capacity-building has often been defined in ways which are too comprehensive, allowing virtually every form of technical assistance to be subsumed under it. The characteristic that sets the concept apart from other forms of assistance and cooperation is its holistic focus on sustainability as well as on national competencies.[45] In other words, capacity-building activities have the direct effect of enabling the beneficiaries to perform and sustain the targeted functions.[46]

112. As underscored in Agenda 21, Chapter 37, "The ability of a country to follow sustainable development paths is determined to a large extent by the capacity of its people and its institutions as well as by its ecological and geographical conditions. Specifically, capacity-building encompasses the country's human, scientific, technological, organizational, institutional and resource capabilities" (para. 37.1). Similarly, the agency most involved in the field of capacity-building, UNDP, defines "capacity" as "the ability of individuals and organizations or organizational units to perform functions effectively, efficiently and sustainably. This definition implies that capacity is not a passive state but part of a continuing process and that human resources are central to capacity development".[47] And the OECD Development Assistance Committee defines "capacity development" as "the process by which individuals, groups, organizations, institutions and societies increase their abilities to: (1) perform core functions, solve problems, define and achieve objectives; and (2) understand and deal with their development needs in a broad context and in a sustainable manner".[48]

113. The developments of the past decade in the law of the sea reflect this trend. In keeping with the renovated impulse that capacity-building received at the turn of the millennium,[49] the newly established United Nations Open-ended Informal Consultative Process on oceans and the law of the sea ("the Consultative Process") included capacity-building among the topics discussed at its first meeting in 2000. As a result of the debate on this topic, the General Assembly, in its resolution 55/7 of 20 October 2000 on oceans and the law of the sea, the first to use the expression "capacity-building", underlined the particular relevance of capacity-building for developing countries, in particular least developed countries and small island developing States. The Assembly also stressed the importance of capacity-building in the context of the Global Programme of Action for the Protection of the Marine Environment from Land-based Activities (GPA) and recommended that capacity-building be examined further during the following session of the Consultative Process. Capacity-building remained central at all succeeding sessions of the Consultative Process and in the text of General Assembly resolutions where, as a result of its cross-sectoral nature, it was dealt with in connection with a wide range of issues such as regional cooperation, integrated management of coastal zones, piracy and armed robbery at sea, marine scientific research, transfer of technology, data acquisition, nautical charts, preparation of submissions to the Commission on the Limits of the Continental Shelf and to the Global Resource Information Database (GRID) system of UNEP.[50] In addition, in its resolution 56/12 of 28 November 2001, the General Assembly recommended that the Consultative Process organize its discussion around capacity-building. In the same resolution, the Assembly requested that a specific section on capacity-building be included in the annual report by the Secretary-General on oceans and the law of the sea.[51]

B. Importance of capacity-building

114. Statements made by delegations since the entry into force of UNCLOS, both in the General Assembly and in the Consultative Process, demonstrate a firm belief in capacity-building and indicate their expectations to benefit therefrom. Furthermore, as a result of its cross-sectoral nature, delegations have referred to capacity-building in the context of the consideration of a wide array of issues. Such issues have included, first of all, the need to implement UNCLOS in a uniform manner, and the need to adopt national legislation that would enable them to benefit from the Convention as well as to discharge their obligations thereunder. The following logical step in this respect is capacity-building to improve States' monitoring and enforcement abilities. In addition, delegations have underlined the need for structural measures aimed at improving institutional and financial conditions, the training of personnel, as well as substantive programmes such as integrated management of coastal and marine areas. In connection with the structural limitations that capacity-building should target, many delegations underscored the need to increase the presence of developing States in the relevant forums and meetings. This is considered to be a precondition for the meaningful participation of such States in all activities addressed by the Convention, especially those requiring a high degree of technical and scientific complexity, such as the preparation of submissions for the delimitation of the outer limit of the continental shelf. Many delegations have expressly indicated this area among the ones in which they need assistance.

115. States have also drawn attention to their need of capacity-building in relation to the transfer of marine technology, especially the most environmentally sound, and therefore the most expensive; fisheries development; marine science, the preparation of nautical charts and lists of geographical coordinates; data acquisition.

C. Work of the Secretariat

116. The United Nations, in view of its mandate, history, experience and universality, is in a position to assist with this capacity-building. The Organization has been actively addressing these needs, for which it has developed an integrated mechanism consisting of a wide-ranging array of advisory services, trust funds, training programmes and technical assistance.

117. The Division for Ocean Affairs and the Law of the Sea has been providing information, advice and assistance to States with a view to promoting a better understanding of the Convention and the related Agreements, their wider acceptance, uniform and consistent application and effective implementation. In addition, the Division provides extensive advisory services to States on the harmonization of national legislation with the provisions of the Convention and the drafting of rules and regulations to implement such legislation; on issues related to the full realization of benefits by States under the Convention, including economic, technological, scientific and environmental issues; on issues related to the ratification of the Convention and the related Agreements, their uniform and consistent application and effective implementation, including the impact of the entry into force of the Convention. The Division also provides assistance to seminars/workshops related to the law of the sea and ocean affairs, as well as assistance in strengthening national training institutions ("training the trainers").

118. The Division carries out studies on, inter alia, State practice in the law of the sea and the legislative history of particular provisions of the Convention. The Division also produces guidelines in respect of the practical application of many complex provisions of the Convention. Of particular note are the guidelines on maritime baselines, the definition of the continental shelf and marine scientific research. These Law of the Sea Publications assist States and intergovernmental organizations in the uniform and consistent application of the relevant provisions of the Convention.

119. The Division maintains an extensive reference collection dealing with ocean and law of the sea matters, providing library services to delegations as well as the Secretariat. The Division's Oceans and Law of the Sea web site (www.un.org/Depts/los) is another important tool for technical assistance. Through the web site, reports and other items as well as legal materials and documents relating to oceans and the law of the sea can be accessed electronically via the Internet.

120. The Commission on the Limits of the Continental Shelf has prepared material to assist in the training of national officials who would prepare the submission of their respective States to the Commission regarding the limits of their continental shelf beyond 200 nautical miles. The Commission has prepared the Scientific and Technical Guidelines (CLCS/11 and Add.1) and a basic flow chart to assist States in the preparation of a submission by a coastal State to the Commission (CLCS/22).

1. United Nations Institute for Training and Research

121. Other training activities of the Division include ad hoc briefings and contributions to training programmes sponsored by national, intergovernmental and non-governmental organizations in the field of oceans and the law of the sea. Two such briefings have been organized, in collaboration with UNITAR, at United Nations Headquarters. The presentations focused on key elements of the law of the sea, addressed issues related to ocean governance and highlighted newly emerging challenges in strengthening and developing the legal regime governing activities on the oceans. The response of the approximately 50 participants in the 2003 briefing was very positive and the Division will endeavour to make the briefing a permanent feature of its work programme. In order to ensure a higher degree of efficacy, however, similar training sessions should be organized at the regional level to promote better understanding among the government officials that develop national policies, as well as among lawyers and the judiciary. The Division is currently reviewing the feasibility of organizing regional seminars, a development welcomed by several delegations.

2. Hamilton Shirley Amerasinghe Memorial Fellowship Programme

122. Under the fellowship programme, now in its eighteenth year of operation, Hamilton Shirley Amerasinghe fellows pursue postgraduate-level research and training in the law of the sea, its implementation and related marine affairs in order to acquire additional knowledge of the Convention and to promote its wider appreciation and application. Established in memory of the first President of the Third United Nations Conference on the Law of the Sea, Ambassador Hamilton Shirley Amerasinghe of Sri Lanka,[52] the Award has gained wide acclaim for its academic contribution to the overall understanding and implementation of the Convention.

123. Fellows are required to spend a period of six months carrying out supervised research/study at a participating university of their choice[53] followed by three months of practical training at the Division for Ocean Affairs and the Law of the Sea and, depending on the topic of their choice, at other United Nations bodies. Two fellows in 2003 carried out their practical training at the International Maritime Organization and at ITLOS. Following the period of internship at ITLOS by one of the fellows, in response to a request of the Tribunal, ITLOS was designated as one of the participating institutions in the fellowship programme. During their six-month research/study at the universities, the fellows are supervised by eminent professors in the field of law of the sea, ocean affairs or related disciplines.

124. The fellowship is intended primarily to advance the proficiency and capability of mid-level government officials, academics and research fellows who are involved in the law of the sea or ocean affairs, and continues to attract a wide range of high-calibre applicants. In 2003, 34 applications from all regions of the world were received.[54] The eighteenth fellowship was awarded to Fernanda Millicay of Argentina, who intends to study the legal regime covering genetic resources in areas of the deep seabed beyond the limits of national jurisdiction. Arrangements are under way for her placement in one of the participating universities of her choice.[55]

125. The award is made by the United Nations Under-Secretary-General for Legal Affairs, The Legal Counsel, on the basis of the recommendation of a high-level advisory panel.[56] Previous fellows have come from Barbados, Bulgaria, Cameroon, Cape Verde, Chile, Colombia, Indonesia, the Islamic Republic of Iran, Kenya, Nepal, Nigeria, Papua New Guinea, Samoa, Sao Tome and Principe, Serbia and Montenegro, Seychelles, Sri Lanka, Thailand, Tonga, Trinidad and Tobago and the United Republic of Tanzania.

126. Although the fellowship has gained widespread recognition and appreciation, voluntary contributions towards its financing have not been sufficient to enable the award of more than one or two fellowships a year and the General Assembly has repeatedly called upon Member States, philanthropic and other interested organizations, foundations and individuals to make voluntary contributions to the fellowship. In the past year, Monaco, Ireland and Cyprus made financial contributions to the fellowship fund.

3. TRAIN-SEA-COAST programme

127. The mission of the TRAIN-SEA-COAST (TSC) programme is to create capacity at the local level for the development, delivery and adaptation of high-quality training courses that meet TSC standards and are tailored to specific training needs at the local, national and regional levels. The GLO/98/G35 project, currently being implemented by the TSC programme, has as its main objective the enhancement of national/regional capacity-building through training on key topics/problems as identified by each associated Global Environment Facility (GEF) International Waters project. The programme's long-standing mandate stems from Secretary-General's bulletin ST/SGB/1997/8 of 15 September 1997, on the organization of the Office of Legal Affairs, which identified one of the core functions of the Division as "providing training and fellowship and technical assistance in the field of the law of the sea and ocean affairs".

128. The managers of eight TSC course development units met in New York from 19 to 22 January 2004 for their second Coordination Conference, which was also

attended by the Chief Technical Advisers of the GEF Benguela Current and Gulf of Guinea projects. The Conference reviewed the TSC "Network Rules" and operational procedures to meet the Network's future requirements, including arrangements for enhanced delivery, adaptation and revision of courses. Participants exchanged views on actions required for the Network to reach its full potential, including for the timely implementation of the TSC/GEF project. A programme of work for the TSC Network as well as the Central Support Unit of the Division at Headquarters, was also discussed. Individual work plans with financial implications up to February 2005 were submitted for consideration. It was agreed that final approval would depend on the availability of funds. A third TSC Coordination Conference is scheduled for February 2005.

4. Trust funds

129. Several trust funds have been established to provide financial assistance in connection with specific issues of relevance for developing States: Trust Fund to assist members of the Commission on the Limits of the Continental Shelf from developing States to participate in its meetings (balance as at 31 December 2003: $124,977; contributions received in 2003: $49,475 from Ireland); Trust Fund to assist developing States in the preparation of submissions to the Commission on the Limits of the Continental Shelf (balance as at 31 December 2003: $1,137,053; contributions received in 2003: $64,440 from Ireland); Hamilton Shirley Amerasinghe Memorial Fellowship (balance as at 31 December 2003: $41,802; contributions received in 2003: $500 from Bahamas, $5,000 from Greece, $4,724 from Ireland, $10,000 from Monaco, $26,111 from the United Kingdom, $50,796 from Trinidad and Tobago); Trust Fund to assist States in their settlement of disputes through ITLOS (balance as at 31 December 2003: $55,235; contributions received in 2003: $12,056 from Finland).

130. The Trust Fund established to assist developing States in attending meetings of the Consultative Process (balance as at 31 December 2003: $189,252; contributions received in 2003: $49,475 from Ireland) has facilitated the active participation of several delegations. During the Fourth Meeting of the Consultative Process, for instance, representatives of eight States received financial assistance for the travel expenses they incurred to attend the Meeting.

131. The fund regarding the assistance to States participants in the Conference on Maritime Delimitation in the Caribbean (balance as at 31 December 2003: $9,176.64),[57] which is managed by the Division for Ocean Affairs and the Law of the Sea with the support of the Department of Economic and Social Affairs, has so far received two contributions from Mexico, both in the amount of $50,000. Assistance from the fund has been provided to States participating in the second session of the Conference. Assistance from the fund has also been approved by the Panel of Advisers with respect to consultancy services to be provided by an international expert to a State participating in the Conference.

D. Work of other organizations

132. A vast range of international organizations carry out capacity-building activities in the field of oceans and the law of the sea. The International Maritime Organization, for example, has provided assistance through its Technical

Cooperation Committee, by means of missions, model legislation, courses, seminars or workshops, aiming at the development of both human resources and infrastructure. The Organization has recently reshaped its capacity-building activities by improving the level of expenditures against programmed funds, by conducting an administrative reorganization and by increasing the number of partnerships. IMO has also continued its activity of capacity-building with regard to piracy.

133. Apart from the organization of workshops to facilitate the national plans of action on by-catch reduction devices as well as on access, regulation and fishing capacity management and the development of a web page for the IPOA-capacity, FAO in 2003 adopted a Strategy for Improving Information on Status and Trends of Capture Fisheries whose overall objective is to provide a framework, strategy and plan for the improvement of knowledge and understanding of fishery status and trends as a basis for fisheries policy-making and management for the conservation and sustainable use of fishery resources within ecosystems. In addition, FAO has actively pursued the facilitation of cooperation among members in support of regional fishery bodies.

134. UNEP has been directly involved with capacity-building through the project "Addressing land-based activities in the Western Indian Ocean", co-financed by GEF and Norway. In 2003, the UNEP/GPA Coordination Office continued to implement the UNEP/WHO/Habitat/Water Supply and Sanitation Collaborative Council Strategic Action Plan on Municipal Wastewater, the main concerns of which included the selection and implementation of pilot projects and the development of training modules through the Train-Sea-Coast programme.

135. UNESCO/IOC[58] has established the practice of identifying academic "chairs" in relevant domains such as marine geosciences and physical oceanography to strengthen the necessary capacity for the successful implementation of the IOC programme in developing countries and to provide IOC member States with trained personnel in disciplines representing important avenues for ocean research and its practical applications. Moreover, together with the Scientific Committee on Oceanic Research, IOC has been providing support for the Programmes of the Partnership for Observation of the Global Ocean (POGO) fellowships to enable scientists from developing countries to visit POGO institutions for periods of intensive training in in situ observation techniques. POGO was established by a group of marine research institutions to enhance their collaborative efforts in support of global oceanography. It is a type II partnership initiated for the World Summit on Sustainable Development and aimed at promoting the intelligent and sustainable use and management of the oceans. In this regard, IOC has also been called upon[59] to develop a capacity-building strategy for remote sensing with a view to meeting the needs of developing countries to make the best use of the remotely sensed ocean data from the satellites that overfly their waters.

136. Pursuant to IOC Assembly resolution XXI-11, item 3 (iii), IOC is promoting an initiative geared specifically towards coastal African States with continental shelf beyond 200 nautical miles. The main objective of this endeavour is the transfer of knowledge to build capacity within such States to enable them to prepare a submission under article 76 of UNCLOS to the Commission on the Limits of the Continental Shelf and to compile, store and analyse existing public-domain data. The initiative, which is to proceed in three phases — feasibility, implementation and

evaluation — was endorsed by the IOC Assembly at its twenty-second session.[60] Canada has offered funding support for the feasibility study phase,[61] and Brazil has indicated that it would offer a second[62] training course in 2004, in association with the Commission on the Limits of the Continental Shelf, on the issues raised under article 76.

137. The United Nations University has been involved in capacity-building activities through the development of regional workshops, training courses and case studies. The UNU Fisheries Training Programme, coordinated by the Marine Research Institute in Reykjavik in cooperation with several research institutions and universities in Iceland, conducts a 6-month postgraduate training course at six fisheries and fisheries-related fields in Iceland, covering fishery policy and planning, marine and inland water resource assessment and monitoring, and environmental assessment and monitoring. In 2003, experts from the programme together with former fellows and other professionals began developing a short course in Viet Nam on safety and quality assurance of seafood, to be completed in 2004. Moreover, the project "Environmental Monitoring and Governance in the East Asian Coastal Hydrosphere" aims to monitor pollution in the marine and coastal environment by land-based sources of persistent organic pollutants. The monitoring continues, including capacity-building for monitoring, in the coastal waters in nine East Asian countries.

138. The International Ocean Institute (IOI) has continued to offer its Training Programme on Ocean Governance. A new training programme on ocean governance is being developed for the experts from the Mediterranean Sea and Eastern Europe to be conducted annually in Malta beginning in 2005. IOI also continues to provide, on national and regional scales, various thematic short courses in response to assessed needs, and in partnership with its host institutions and other agencies. Policy and research analysis continues to be a growing programme area for IOI as nations begin to develop national and regional ocean management regimes. IOI has actively contributed to the development of Thailand's Ocean Policy and of the Pacific Islands Regional Ocean Policy, as well as the work of the Arctic Council in developing an Arctic policy for the protection of that vulnerable and important marine environment.

VI. Developments relating to international shipping activities

A. Training of seafarers and labour conditions

139. *Training of seafarers and manning of vessels.* The IMO Assembly at its 23rd session adopted a human element vision, principles and goals for the organization, which includes the goals of conducting a comprehensive review of selected existing IMO instruments from the human element perspective and of promoting and communicating, through human element principles, a maritime safety culture, security consciousness and heightened marine environment awareness (resolution A.947(23)). The Assembly also adopted amendments to its 1999 resolution A.890(21) on principles of safe manning (resolution A.955(23)) and recommendations on training and certification and operational procedures for maritime pilots other than deep-sea pilots (resolution A.960(23)).

140. *Labour conditions*. The General Assembly in its resolution 58/240 welcomed the work of the International Labour Organization (ILO) to consolidate and modernize international maritime labour standards and called upon Member States to take an active interest in the development of those new standards for seafarers and fishers. The High-Level Tripartite Working Group on Maritime Labour Standards, at its fourth meeting, in January 2004, considerably narrowed the areas of potential disagreement, thus facilitating the work of the Preparatory Technical Maritime Conference to be held in September 2004.

141. Conditions of work in the fishing sector will be considered by the ILO Conference at its 92nd session in June 2004, with a view to the eventual adoption of a comprehensive standard (a Convention supplemented by a Recommendation). The International Labour Office has prepared a report on law and practice in ILO member States concerning living and working conditions in the fishing sector.[63] Among the reasons for developing new standards in the fishing sector are the following: a number of existing ILO standards aimed at fishermen require revision because their provisions are deemed to be for the most part outdated; existing ILO standards for fishermen are poorly ratified and exclude large numbers of fishermen (particularly those in the small-scale and artisanal sector, i.e. those on smaller vessels) from their scope; only in very few countries do fishermen enjoy the protection of existing maritime labour standards for seafarers; fishermen may lose some of the protection provided by the existing maritime labour standards for seafarers (where they include fishermen in their scope or provide a mechanism for extending protection to fishermen), as the new framework Convention would exclude them from its scope; fishermen tend to be excluded from many laws and regulations on a variety of issues providing protection for workers in general; and specific action is needed to improve the safety and health of all fishermen. The report and related issues proposed for discussion at the Conference[64] were considered at the Tripartite Meeting of Experts on Labour Standards for the Fishing Sector (Geneva, September 2003).[65]

142. At its fifth session in January 2004, the Joint IMO/ILO Ad Hoc Expert Working Group on Liability and Compensation regarding Claims for Death, Personal Injury and Abandonment of Seafarers reviewed the responses of Governments to the implementation of IMO Assembly resolutions A.930(22) and A.931(22) on abandonment, and on personal injury or death, respectively, of seafarers. The Working Group agreed that ILO and IMO should authorize it to proceed with the development of a longer-term sustainable solution to address the problems of financial security with regard to compensation in case of death and personal injury.

143. The International Convention on the Protection of the Rights of All Migrant Workers and Members of Their Families entered into force on 1 July 2003. The Convention breaks new ground in defining rights applying to certain categories of migrant workers and their families, including seafarers employed on vessels registered in a State other than their own and workers on offshore installations under the jurisdiction of a State other than their own. It also contains international standards for the treatment, welfare and human rights of both documented and undocumented migrants, as well as obligations and responsibilities for both sending and receiving States.

B. Transport of dangerous goods

144. *Heavy grade oil.* The IMO Marine Environment Protection Committee (MEPC), at a special 50th session, in December 2003 (MEPC 50), adopted a new regulation 13H to Annex I to the International Convention for the Prevention of Pollution from Ships, 1973, as modified by the Protocol of 1978 relating thereto (MARPOL 73/78). Regulation 13H requires the carriage of heavy grade oil[66] in single-hull tankers of 5,000 tons deadweight and above to be phased out by 5 April 2005, and in single-hull oil tankers between 600 tons dwt and 5,000 tons dwt, not later than the anniversary of their delivery date in 2008. Certain category 2 or 3 tankers carrying heavy grade oil as cargo, fitted only with double bottoms or double sides, not used for the carriage of oil and extending to the entire cargo tank length, or double-hull spaces not meeting the minimum distance protection requirements which are not used for the carriage of oil and extend to the entire cargo tank length, may be allowed by their administration to operate beyond 5 April 2005 until the date when the ship reaches 25 years of age after its delivery date.

145. Regulation 13H also allows for the continued operation of single-hull oil tankers of 600 tons dwt and above but less than 5,000 tons dwt, carrying heavy grade oil as cargo, and of oil tankers of 5,000 tons dwt and above, carrying crude oil with a density at 15°C higher than 900 kg/m$_3$ but lower than 945 kg/m$_3$, if satisfactory results of the Condition Assessment Scheme (CAS) warrant that, in the opinion of the flag State, the ship is fit to continue such operation, having regard to the size, age, operational area and structural conditions of the ship, provided also that the continued operation shall not extend beyond the date on which the ship reaches 25 years after the date of its delivery. Oil tankers of 600 tons dwt and above carrying heavy grade oil as cargo may be exempted from the scope of application of regulation 13H if they are engaged in voyages exclusively within an area under the party's jurisdiction, or within an area under the jurisdiction of another party, provided that the party within whose jurisdiction the ship will be operating so agrees. The same applies to vessels operating as floating storage units of heavy grade oil. Parties to MARPOL 73/78 will be entitled to deny entry to single-hull tankers carrying heavy grade oil allowed to continue operation under the exemptions into ports or offshore terminals under their jurisdiction, or to deny ship-to-ship transfer of heavy grade oil in areas under its jurisdiction, except when necessary for the purpose of securing the safety of a ship or saving life at sea.

146. *Radioactive material.* The General Assembly in its resolution 58/240 welcomed the adoption of resolution GC(47)/RES/7 by the General Conference of the International Atomic Energy Agency concerning measures to strengthen international cooperation in nuclear, radiation, transport safety and waste management, including those aspects relating to maritime transport safety, in which it requested the Agency to develop an action plan, in consultation with its member States and for approval by the Board of the Agency, if possible in March 2004, based on the results of the International Conference on the Safety of Transport of Radioactive Material and within the Agency's competence. In resolution GC(47)/RES/7 the General Conference had recognized that the safety record, which had historically been excellent, could best be maintained by continuing efforts to improve the regulatory and operational practices and ensure the strict implementation of guidelines.

147. The General Conference furthermore stressed the importance of having effective liability mechanisms in place to insure against harm to human health and the environment as well as actual economic loss due to an accident or incident during the maritime transport of radioactive materials, acknowledge the Conference President's conclusion that the preparation of explanatory text for the various nuclear liability instruments would assist in developing a common understanding of the complex issues and thereby promote adherence to those instruments and welcomed the decision of the Director-General to appoint a group of experts to explore and advise on issues related to nuclear liability. The latest development in nuclear liability is the signing on 12 February 2004 of Protocols to amend the Paris Convention on Third Party Liability in the Field of Nuclear Energy and the Brussels Convention Supplementary to the Paris Convention. These instruments will raise the limits of compensation, expand the definition of damage to include reinstatement of an impaired environment and loss of income from the impaired environment, and extend the geographic scope of the Convention.[67]

C. Safety of navigation

148. In its resolution A.958(23) of 5 December 2003, on the provision of hydrographic services, the IMO Assembly recognized that in many parts of the world, waters used by international shipping had not yet been surveyed to modern hydrographic survey standards as established by the International Hydrographic Organization (IHO) or were not regularly surveyed by an established hydrographic service. The Assembly invited Governments, in addition to the existing obligations contained in SOLAS regulation V/9: (a) to promote, through their national maritime administrations, the use of Electronic Chart Display and Information Systems (ECDIS) together with the use and further production of official Electronic Navigational Charts (ENCs); (b) to cooperate with other Governments having little or no hydrographic capabilities, as appropriate, in the collection and dissemination of hydrographic data; (c) to promote, in consultation with and with the assistance of IMO and IHO, support for Governments requesting technical assistance in hydrographic matters; and (d) to establish Hydrographic Offices, where they do not already exist, in consultation with IHO. The Assembly also invited Governments non-members of IHO to consider joining the organization.

149. The IMO Assembly also adopted amendments to the traffic separation scheme "Off Finisterre" providing for the establishment of two additional traffic lanes in the exclusive economic zone of Spain for ships carrying dangerous bulk cargoes with a view to enhancing maritime safety, the safety of navigation and the protection of the marine environment.

D. Implementation and enforcement

150. The General Assembly in its resolution 58/240 called for several measures to be taken to strengthen flag State implementation and enforcement and underlined the important role of port States. It urged flag States without an effective maritime administration and appropriate legal frameworks to establish or enhance the necessary infrastructure, legislative and enforcement capabilities to ensure effective compliance with, and implementation and enforcement of, their responsibilities under international law and, until such action is undertaken, to consider declining

the granting of the right to fly their flag to new vessels, suspending their registry or not opening a registry. The General Assembly invited IMO and other competent international organizations to study, examine and clarify the role of the "genuine link" in relation to the duty of flag States to exercise effective control over ships flying their flag, including fishing vessels. Article 91 of UNCLOS requires that a genuine link exist between the State and the ship. The General Assembly furthermore requested the Secretary-General, in cooperation and consultation with relevant agencies, organizations and programmes of the United Nations system, to prepare and disseminate to States a comprehensive elaboration of the duties and obligations of flag States, including the potential consequences of non-compliance prescribed in the relevant international instruments. The Assembly encouraged IMO to accelerate its work in developing a voluntary model audit scheme and urged the organization to strengthen its draft implementation code. It also requested IMO and FAO to enhance their cooperation and coordination in their efforts with regard to flag State duties relating to compliance by their fishing vessels with conservation and management measures, including through the Inter-Agency Consultative Group on Flag State Implementation during the period of the Group's existence.

151. The IMO Assembly, in its resolution A.946(23), endorsed the decisions of Council relating to the development of a voluntary IMO member audit scheme in such a manner as not to exclude the possibility in the future of it becoming mandatory. The scheme will help promote maritime safety and environmental protection by assessing how effectively member States implement and enforce relevant IMO Convention standards and by providing them with feedback and advice on their current performance. In the resolution, the Assembly requested the IMO Council to develop, as a matter of priority, procedures and other modalities for the implementation of the scheme and urged Governments to volunteer to be audited in accordance with the scheme and its principles and to assist the organization in its efforts to achieve consistent and effective implementation of IMO instruments, recognizing that the principle of sovereignty should be fully respected. The process and results of the audits will be used to further enhance the implementation of instruments and to determine the technical cooperation assistance needs of audited States. The Assembly decided that, within the context of resolution A.901(21) on IMO and technical cooperation in the 2000s, technical cooperation should be provided as appropriate, before or after the audit process.

152. The Secretary-General of IMO anticipated that the voluntary audit scheme would eventually become mandatory. He suggested that IMO Conventions could have performance clauses similar to those contained in the STCW Convention and that sanctions and penalties should be applied if Convention requirements were not adhered to. He urged Governments to ensure that future Conventions include "a mechanism for dealing with quality — for measuring quality, ensuring quality and imposing meaningful sanctions if the delivery of quality is not achieved". While the lack of control to ensure that ships were meeting international standards was being partly filled by port State control regimes, as well as by regional organizations such as the European Union issuing blacklists of vessels detained, targeted or prohibited, compliance monitoring would be more effective and meaningful if it were controlled by IMO, which would ensure uniformity of application.[68]

153. The shipping industry has developed Guidelines on Flag State Performance[69] in order to encourage ship operators to examine the performance of a flag State before using it and to put pressure on their States to effect any improvements that

might be necessary especially in relation to safety of life at sea, the protection of the marine environment and the provision of acceptable working and living conditions for seafarers. The Guidelines address the responsibilities that shipping companies should reasonably expect a flag State to assume and contain a table on flag State performance derived from factual data available in the public domain to provide a general appreciation of a flag State's performance. The table shows the following flag States to have 12 or more negative performance indicators: Albania, Belize, Bolivia, Cambodia, Costa Rica, Democratic Republic of the Congo, Honduras, Jordan, Madagascar, Sao Tome and Principe, Suriname and Syrian Arab Republic.

154. *Port State control.* One means of assessing the effective enforcement of international rules is to examine the collective port State control record of ships flying a particular flag. The European Commission has published a list of 10 ships that were refused access to Community ports between 22 July and 1 November 2003 because they had already been detained more than twice and were included in the blacklist published as part of the annual report of the Paris Memorandum of Understanding on Port State Control. Of the 10 ships, four flew the Cambodian flag and the remainder flew respectively the flags of Lebanon, Cyprus, Panama, Honduras, Saint Vincent and the Grenadines or Turkey. The European Commission has also published by way of warning an indicative list of 143 ships which may be banned if they are again detained in a European Union port. The flag States and the corresponding number of ships on the list are as follows: Albania (1), Algeria (11), Bolivia (6), Bulgaria (1), Cambodia (15), Cyprus (7), Democratic Republic of Korea (1), Georgia (5), Honduras (3), Lebanon (2), Malta (4), Morocco (2), Panama (15), Romania (6), Saint Vincent and the Grenadines (17), Syrian Arab Republic (4), Tonga (2) and Turkey (41).[70]

155. The General Assembly in its resolution 58/240 invited IMO to strengthen its functions with regard to port State control in relation to safety and pollution standards as well as maritime security regulations and, in collaboration with ILO, labour standards so as to promote the implementation of globally agreed minimum standards by all States, and invited FAO to continue its work in promoting port State measures in relation to fishing vessels in order to combat IUU fishing.

E. Places of refuge

156. The General Assembly in its resolution 58/240 encouraged States to draw up plans and to establish procedures to implement the guidelines on places of refuge for ships in need of assistance under development in IMO for ships in waters under their jurisdiction. The guidelines were subsequently adopted by the IMO Assembly (resolution A.949(23)) in December 2003. The guidelines are intended for use when a ship is in need of assistance; where safety of life is involved, the SAR Convention applies. The guidelines recognize that the best way of preventing damage or pollution due to the progressive deterioration of a ship following an incident is to transfer its cargo and bunkers and repair the casualty in a place of refuge, as it is rarely possible to deal satisfactorily and effectively with a maritime casualty in open sea conditions. However, such operations may meet the strong objections of the local authorities and populations in the fear that they might endanger the coastal State, both economically and environmentally. Therefore, granting access to a place of refuge may involve a political decision which can only be taken on a case-by-case basis, taking into consideration the need to balance the interests of the affected

ship with those of the environment. The guidelines provide member Governments, shipmasters, companies and salvors with a common framework to assess the situation, enabling them to respond effectively and in concert. When permission to access a place of refuge is requested, the coastal State is under no obligation to grant it, but it should weigh all factors and risks in a balanced manner and give shelter whenever reasonably possible. The guidelines advise coastal States to establish a maritime assistance service.

157. The IMO Assembly also adopted a resolution on Maritime Assistance Services (resolution A.950(23)). All coastal States are recommended to establish a Maritime Assistance Service in order to receive the various reports, consultations and notifications required in a number of IMO instruments for monitoring a ship's situation if it is in need of assistance; to serve as the contact point if there is no distress situation and exchanges of information between the ship and the coastal State are required; and to serve as the contact point between private salvors and the coastal State if it considers that it should monitor all phases of the salvage operation.

VII. Maritime security and crimes at sea

A. Prevention and suppression of acts of terrorism against shipping

158. A new comprehensive maritime security regime for international shipping contained in several amendments to SOLAS will enter into force on 1 July 2004. The new regime includes the International Ship and Port Facility Security (ISPS) Code, Part A, which is mandatory and Part B, which is voluntary. Flag States will now be required to issue a Continuous Synopsis Record (CSR) to ships flying their flag, designed to provide an on-board record of the history of the ship with its name, flag State, the date on which the ship was registered with that State, the ship's identification number, the port at which the ship is registered and the name of the registered owner(s) and their registered address. In December 2003, the IMO Assembly adopted a format and guidelines for the maintenance of the CSR (resolution A.959(23)).

159. Under the ISPS Code, all ships must be provided with a ship security alert system according to a strict timetable with most vessels to be fitted by 2004 and the remainder by 2006. Ships must be able to present to port State control officers an International Ship Security Certificate which provides evidence that the ship conforms to the new security requirements. If the coastal State has clear grounds for believing that a ship is not in compliance, it may either require the ship to rectify the non-compliance or proceed to a location specified in its territorial sea or internal waters; or it may inspect the ship if it is in its territorial sea, or deny its entry into port. A ship can only be denied entry into port or be expelled therefrom if there are clear grounds for believing that the ship poses an immediate threat to the security or safety of persons, or of ships or other property, and there are no appropriate means for removing the threat. In such cases the authorities of the port State should communicate the relevant facts to the authorities of the State of the next port of call and to other potentially affected coastal States. Ships that are unduly delayed or detained are entitled to compensation for any loss or damage suffered. The new amendments also apply to port facilities where there is a ship/port interface. The

wider issue of the security of port areas has been the subject of collaboration between IMO and ILO, resulting in a Code of Practice on Security in Ports which has been submitted to the Governing Board of ILO for approval in March 2004.[71] The Code extends the consideration of port security beyond the area of port facility into the whole port. It is intended to be compatible with the provisions of the ISPS Code and addresses port security policy, assessment and plans as well as related tasks and roles, and security awareness and training, which are vital for the successful implementation of an appropriate port security strategy.

160. Modifications to Chapter V (Safety of Navigation) of SOLAS containing a new timetable for the fitting of automatic identification systems (AIS) will enter into force on 31 December 2004. Ships of less than 50,000 gross tonnage, other than passenger ships and tankers, will have to fit AIS by that date. The Subcommittee on Safety of Navigation is developing functional requirements for the long-range identification and tracking of ships. It has been suggested that coastal States be permitted to identify and track ships up to 200 nm offshore.[72]

161. The General Assembly in its resolution 58/240 once again urged States to become parties to the Convention for the Suppression of Unlawful Acts against the Safety of Maritime Navigation (SUA Convention) and its Protocol, invited them to participate in the review of those instruments by the IMO Legal Committee and urged them to take appropriate measures to ensure their effective implementation, in particular through the adoption of legislation aimed at ensuring a proper framework for responses to incidents of armed robbery and terrorist acts at sea. The Committee continued its consideration of a draft protocol to the SUA Convention and its Protocol in October 2003, focusing on draft article 3bis introducing new offences and on draft article 8bis on boarding provisions. While the Committee seemed to accept the need to include provisions concerning boarding in the draft protocol, albeit with substantial modifications to the current draft, no agreement was reached on whether provisions on weapons of mass destruction should be included.[73] Delegations believed that the master and the crew should be protected from prosecution where under normal circumstances they would have no control over and were ignorant of the reasons for the transport of substances carried on board.[74]

B. Trafficking in weapons of mass destruction

162. At a meeting in Paris held on 4 September 2003, the 11 States participating in the Proliferation Security Initiative[75] outlined its scope in a Statement of Interdiction Principles, the intention of which is to build on efforts by the international community to prevent the proliferation of weapons of mass destruction, including in existing treaties and regimes. It is considered to be consistent with and a step in the implementation of the statement made by the President of the Security Council on behalf of the Council at the conclusion of the Council's 3046th meeting held at the level of heads of State and Government on 31 January 1992 (see S/23500), in which the Council declared that the proliferation of all weapons of mass destruction constitutes a threat to international peace and security and underlined the need to prevent proliferation. In their statement, the participants in the Proliferation Security Initiative called upon all States to join them in: (a) interdicting the transfer or transport of weapons of mass destruction, their delivery systems and related materials to and from States and non-State actors of proliferation concern;[76] (b) adopting streamlined procedures for the rapid exchange

of relevant information concerning suspected proliferation activity, dedicating sufficient resources to the effort and maximizing coordination with other interdiction participants; (c) strengthening national legal authorities where necessary to accomplish interdictions, as well as relevant international laws and frameworks when necessary; and (d) taking specific actions in support of interdiction efforts to the extent that their national legal authorities permit and consistent with their obligations under international law and frameworks. Such actions include not transporting or assisting in the transport of targeted cargoes; taking the initiative to board and search any vessel flying their flag beyond the territorial sea of any other State and to seize such cargoes that are identified; seriously considering providing consent under the appropriate circumstances to the boarding and searching of its own flag vessels by other States; taking steps to board and search other States' vessels in a State's territorial waters or contiguous zone (where declared); and enforcing conditions on vessels entering or leaving their ports, internal waters or territorial seas that are reasonably suspected of carrying such cargoes, for example, requiring that such vessels be subject to boarding, search and seizure of such cargoes prior to entry.[77] At a meeting of the Proliferation Security Initiative in October 2003, participants had an initial exchange of views on a proposed Boarding Agreement presented by the United States. In addition to the initial 11 States, Canada, Denmark, Norway, Singapore and Turkey also attended a two-day meeting of the Initiative in December 2003.

C. Piracy and armed robbery against ships

163. The number of incidents of piracy and armed robbery against ships, reported from 1984 (when IMO began keeping records) to the end of March 2003, has risen to 3,041. According to the International Maritime Bureau of the International Chamber of Commerce, during 2003 the number of incidents increased[78] to 445 actual and attempted attacks, from 370 in 2002. Violence also rose, with 21 seafarers killed, 40 assaulted and 88 injured. The number of hostages nearly doubled, to 359. Ships were boarded 311 times and 19 ships were hijacked. The Bureau believes that kidnappings of crew are largely the work of militia groups in politically vulnerable areas.[79]

164. Reports indicate that the areas most affected were the Far East, in particular the South China Sea and the Malacca Strait, South America and the Caribbean, the Indian Ocean and West and East Africa. Indonesia continues to record the highest number of attacks, with 121 reported incidents in 2003. Piracy attacks in Bangladesh ranked second highest with 58 attacks and Nigeria ranks third with 39 attacks. There were 28 incidents in the Malacca Straits. Most of the attacks worldwide were reported to have taken place in territorial waters while the ships were at anchor or berthed.

165. The General Assembly in its resolution 58/240 once again urged States to combat piracy and armed robbery at sea by adopting measures, including those relating to assistance with capacity-building through training of seafarers, port staff and enforcement personnel and by adopting national legislation, as well as providing enforcement vessels and equipment and guarding against fraudulent ship registration. It also urged States to promote, conclude and implement cooperation agreements, in particular at the regional level and in high-risk areas. The 10 States members of the Association of South-East Asian Nations and China, Japan, the

Republic of Korea, Bangladesh, India and Sri Lanka are negotiating a regional cooperation agreement on combating piracy and armed robbery against ships in Asia.

166. IMO has also been promoting the conclusion of regional agreements/Memoranda of Understanding on the prevention and suppression of piracy and armed robbery in the context of the regional meetings it has convened as part of its anti-piracy project. The Maritime Safety Committee at its 77th session endorsed the subregional/regional meetings convened by the secretariat and expert missions to other regions of the world, and agreed that IMO should continue to take the lead in the development of regional cooperation activities and agreements/arrangements.

D. Smuggling of migrants

167. The ability of the international community to effectively combat and suppress transnational organized crime will be greatly enhanced as a result of the entry into force of the United Nations Convention against Transnational Organized Crime[80] on 25 September 2003. The Convention is supplemented by three Protocols, including the Protocol against the Smuggling of Migrants by Land, Sea and Air.[81] With the entry into force of the Protocol on 28 January 2004, States parties are required to cooperate to the fullest extent possible to prevent and suppress the smuggling of migrants by sea, in accordance with the international law of the sea. The provisions of the Protocol relating to the smuggling of migrants by sea are mainly based on article 17 of the 1988 United Nations Convention against Illicit Traffic in Narcotic Drugs and Psychotropic Substances.[82] The Protocol permits a State party, other than the flag State, to board, search or take other appropriate action against a vessel suspected of being engaged in the smuggling of migrants by sea. States parties may also take measures against ships without nationality. The provisions in the Protocol are intended to cover vessels "engaged" both directly and indirectly in the smuggling of migrants.[83]

168. In accordance with the Protocol, when taking measures against a vessel, States must ensure the humane treatment of the persons on board; take due account of the need to prevent the endangerment of the security of the vessel or its cargo; not prejudice the commercial or legal interests of the flag State or any other interested State; and ensure within available means that any measure taken is environmentally sound. Measures must not interfere with or affect the rights and obligations and the exercise of jurisdiction of coastal States in accordance with the international law of the sea, or the authority of the flag State to exercise jurisdiction and control in administrative, technical and social matters involving the vessel. Nothing in the Protocol is to affect the other rights and obligations and responsibilities of States and individuals under international law, including international humanitarian law and international human rights law, and including the 1951 Convention and the 1967 Protocol relating to the Status of Refugees and the principle of non-refoulement.

169. During the past year, efforts have continued at strengthening regional cooperation in combating the smuggling of migrants. For example, at the second regional Ministerial Conference on People Smuggling, Trafficking in Persons and Related Transnational Crime, hosted by Australia and Indonesia in Bali in April 2003, Ministers from 31 countries and over 300 experts agreed that tightening domestic laws on smuggling and trafficking was a necessary step. It was agreed that

more needed to be done to improve law enforcement, legal structures and cooperation between agencies such as intelligence and law enforcement agencies.[84]

E. Illicit traffic in narcotic drugs and psychotropic substances

170. The ministerial segment of the forty-sixth session of the Commission on Narcotic Drugs[85] provided an opportunity to review progress in implementing the commitments made in 1998 at the special session of the General Assembly on the world drug problem,[86] including those relating to cooperation in maritime drug law enforcement. Drug trafficking by sea remains a major challenge for States, as indicated by States in their responses to two biennial questionnaires sent by the United Nations International Drug Control Programme (UNDCP). More than half the responding States indicated that their legislation facilitated cooperation in countering such trafficking, and 31 per cent of the respondents reported that they had concluded agreements with other States relating to countering drug trafficking by sea and that those agreements had led to successful interceptions of vessels carrying illicit drug consignments. One of the difficulties encountered in meeting requests for assistance in countering illicit traffic by sea was re-flagging, which made identification of the State of registry problematic.[87]

171. In its resolution 46/3, entitled "Enhancing international cooperation in combating drug trafficking by sea", the Commission on Narcotic Drugs, concerned about the continued increase in trafficking by sea in narcotic drugs and psychotropic substances, noted the progress made by UNDCP in developing a practical guide for competent national authorities responsible for receiving and responding to requests made pursuant to article 17 of the 1988 Convention and invited Member States to evaluate the usefulness of the guide. The Commission furthermore encouraged Member States to establish at the national level, appropriate, reliable and consistent channels for the exchange of information required for expeditious responses to requests made pursuant to article 17 and urged Member States with particular expertise in maritime interdiction to provide, within available resources and in cooperation with UNDCP, assistance, training and equipment to interested States, upon request.

VIII. The marine environment, marine resources and sustainable development

A. Protection and preservation of the marine environment

1. Pollution from vessels

172. *Oil tankers*. Significant new measures to prevent pollution of the marine environment from oil adopted at MEPC 50 included a revised, accelerated phase-out scheme for single-hull tankers, plus an extended application of the Condition Assessment Scheme (CAS) for tankers, as well as new regulation 13H requiring the carriage of heavy grade oil in double-hull tankers, as described in paragraphs 144 and 145 above. These amendments to MARPOL Annex I advanced the final phasing-out date for category 1 tankers (pre-MARPOL tankers) from 2007 to 5 April 2005, and for category 2 and 3 tankers (MARPOL tankers and smaller tankers) from 2015 to 2010.[88] CAS will be applicable to all single-hull tankers of 15 years or

older. Consequential enhancements to the CAS scheme were also adopted. Flag States may continue to operate category 2 or 3 tankers beyond 2010, subject to satisfactory results from CAS, but their continued operation must not extend beyond the anniversary of the date of delivery of the ship in 2015 or the date on which the ship reaches 25 years of age after the date of its delivery, whichever is earlier.

173. Certain category 2 or 3 oil tankers fitted with only double bottoms or double sides not used for the carriage of oil and extending to the entire cargo tank length or double-hull spaces and not meeting the minimum distance protection requirements may be allowed to continue operation beyond 2010, provided that the ship was in service on 1 July 2001, that the administration is satisfied by verification of the official records that the ship complied with the conditions specified and that those conditions remain unchanged. Again, such continued operation must not extend beyond the date on which the ship reaches 25 years of age after the date of its delivery.

174. The MARPOL amendments are expected to enter into force on 5 April 2005 under the tacit acceptance procedure. Similar measures are already in effect in the European Union since 21 October 2003, with entry into force of European Commission regulation No. 1726/2003 adopted by the European Parliament and the Council on 22 July 2003, providing for an accelerated phase-out of single-hull tankers beginning in 2003 for some oil tankers in categories 1, 2 and 3 and ending in 2005 for all category 1 tankers and 2010 for category 2 and 3 oil tankers. The regulation requires compliance with CAS by all tankers and bans the carriage of heavy fuel oil in single-hull oil tankers bound for and leaving EU ports (see A/58/65, paras. 40 and 41).

175. *Air pollution from ships.* At its 23rd session, the IMO Assembly, in its resolution A.963 (23), adopted policies and practices related to the reduction of greenhouse gas emissions from ships. It urged MEPC to identify and develop the mechanisms needed to achieve the limitation or reduction of greenhouse gas emissions from international shipping and to give priority to the establishment of a greenhouse gas emission baseline; the development of a methodology to describe the greenhouse gas efficiency of a ship expressed as greenhouse gas emission indexing for that ship; the development of guidelines by which the greenhouse gas emission indexing scheme might be applied in practice; and the evaluation of technical, operational and market-based solutions. The Assembly also requested the Committee to keep the matter under review and to prepare consolidated statements of continuing IMO policies and practices related to the limitation or reduction of greenhouse gas emissions from international shipping. In the discussions leading up to the adoption of the resolution, Brazil, China and India expressed reservations with regard to the draft text, contending that it did not distinguish between the countries that were required by Annex I to the Kyoto Protocol to the United Nations Framework Convention on Climate Change to pursue the limitation or reduction of emissions of their greenhouse gases and those that were not. A prescription of voluntary action in the draft, in their view, could encourage Annex I countries to avoid their commitments under the Kyoto Protocol, thus setting a dangerous precedent.

176. *Particularly sensitive sea areas (PSSAs).* At its 49th session, MEPC designated in principle as a PSSA a large sea area off the western coast of Belgium, France, Ireland, Portugal, Spain and the United Kingdom from the Shetland Islands

in the north to Cape Vicente in the south, together with the English Channel and its approaches (A/58/65/Add.1, paras. 92-94). A 48-hour reporting system for ships carrying certain cargoes entering the PSSA proposed as an associated protective measure for the PSSA will be considered by the IMO Subcommittee on the Safety of Navigation in July 2004. Delegations which had raised potential legal issues relating to the proposed Western European PSSA were invited to direct their concerns to the Legal Committee (LEG).

177. At LEG 87,[89] diverging views were expressed as to the validity of the Western European PSSA, some asserting that it exceeded the restrictive framework regulated by article 211(6) of UNCLOS, while others reaffirmed the validity of the designation. Diverging views were also expressed with regard to the associated protective measure. However, the proposing delegations assured the meeting that the 48-hour notification measure would not be used as a basis for prohibiting the legitimate use of the PSSA in accordance with the principle of freedom of navigation. Several delegations noted the need for further study of the legal implications of the designation of the Western European PSSA area. The Committee noted that, while MEPC had not referred the question to LEG, any delegation was free to bring questions of a legal nature to it, which would be dealt with under "Any other business", but that LEG should not engage in a re-argument of the technical case for the designation of the PSSA or its associated protective measure, since those matters were beyond its purview.

178. The recent trend of proposing large sea areas for designation as particularly sensitive appears to be continuing. A proposal to designate the Baltic Sea as a PSSA (except Russian waters) has been submitted to the 51st session of MEPC (29 March-2 April 2004), by Denmark, Estonia, Finland, Germany, Latvia, Lithuania, Poland and Sweden. However, no new associated protective measures have been proposed at this stage.[90] MEPC will also consider a proposal by Spain to designate the waters of the Canary Islands as a PSSA,[91] with protective measures including restricted navigation areas and a reporting requirement for vessels transporting heavy oils through the PSSA. MEPC will further consider a proposal by Ecuador to designate the Galapagos Archipelago as a PSSA (MEPC 51/8/2 and Corr.1).

2. Control of harmful organisms and pathogens in ballast water

179. The International Convention for the Control and Management of Ships' Ballast Water and Sediments was adopted by consensus at an international conference held at IMO headquarters from 9 to 13 February 2004. The purpose of the Convention is to prevent the potentially devastating effects of the spread of harmful aquatic organisms carried by ships' ballast water. If transported to environments away from their origin, marine plants and animals can invade the new ecosystem and destroy the native species, while pathogens may cause diseases to organisms in the new environment and even damage human health. The rules and regulations laid down in the Convention and its technical annex are intended to prevent, minimize and ultimately eliminate the transfer of harmful aquatic organisms and pathogens through the control and management of ships' ballast water and sediments. The general principle of the Convention is that except where expressly provided otherwise, the discharge of ballast water should only be conducted through ballast water management, in accordance with the provisions of the annex.

180. The Convention requires all ships to implement a ballast water and sediments management plan, to carry a ballast water record book and to carry out ballast water management procedures to a given standard. Existing ships are allowed a phase-in period. Parties may take additional measures subject to criteria set out in the Convention and to IMO guidelines yet to be developed, after consultation with other States that may be affected. However, the parties should ensure that ballast water management practices do not cause greater harm to their environment, human health, property or resources, or to those of other States, than the harm which those practices are designed to prevent. In addition, parties must ensure that ports and terminals where cleaning or repair of ballast tanks takes place have adequate facilities for receiving sediments.

181. Because no fully effective method for eliminating all organisms and pathogens in ballast water yet exists, parties to the Convention undertake to promote and facilitate scientific and technical research on ballast water management, and to monitor the effects of ballast water management in waters under their jurisdiction. Finally, in addition to requirements for technical assistance in the Convention itself, the Conference adopted a resolution on the promotion of technical cooperation and assistance. The GEF/UNDP/IMO Global Ballast Water Management Programme (GloBallast) already provides technical support and expertise to developing countries in several regions under a multi-million dollar project.[92]

3. Waste management

182. *Ocean dumping*. In recent years, the dumping of substances considered to be a threat to the marine environment and incineration at sea have gradually been phased out as a result of the adoption of international norms promoting the reduction of hazardous waste generation and the development of more environmentally friendly disposal methods on land.

183. However, the presence of substances dumped before the institution of these new norms poses a threat to the marine environment and, ultimately, to human health. For example, chemical weapons dumped in the Baltic Sea after the end of the Second World War are now resurfacing due to the corrosion of the metal containers in which they were sunk. Russian scientists report that the chemicals are leaking into the marine environment, and will eventually accumulate in living organisms, including fish that may enter the human food chain.[93] Some fishers have found bombs containing chemical agents in their nets, resulting in the poisoning of members of the crew. The Helsinki Commission has published guidelines for fishing crews on avoiding risky areas and handling weapons they may pull up, including medical advice and information on cleaning boats after such incidents. The Commission believes that the weapons do not constitute a significant threat to the Baltic Sea and that current information suggests that they present no risk to plants or animals.[94]

184. A new potential form of ocean dumping attracting international attention is the possibility of the disposal of CO_2 at sea. The United Nations Framework Convention on Climate Change, 1992 and the London Dumping Convention, 1972 and its 1996 Protocol have adopted different approaches with respect to the use of the ocean as a "sink" or disposal area for CO_2. While the Climate Change Convention specifically encourages the development of the ocean as a sink for CO_2,[95] the dumping of industrial waste has been banned under the London

Convention since 1993. Research has shown some potential dangers to deep sea ecology, as well as the risk that the CO_2 will escape.

185. The Intergovernmental Oceanographic Commission (IOC) of UNESCO and the Scientific Committee on Oceanic Research have established an advisory panel on ocean carbon dioxide, to ensure that decision makers and the general public have access to an unbiased picture of worldwide research on ocean carbon sequestration. A symposium on "The Ocean in a High CO_2 World" has been scheduled for March 2004 to gather current scientific knowledge in order to determine whether — and at what levels — increasing carbon dioxide will affect the oceans, their marine life and coral reefs.

186. The Contracting Parties to the London Convention met in London from 6 to 10 October 2003 for their 25th Consultative Meeting. Having reviewed the 2002 updated long-term programme for the Convention, the Meeting decided that the immediate priority was to promote the effective implementation of the Convention and the early entry into force of the 1996 Protocol. A revised long-term strategy for technical cooperation and assistance under the London Convention was also adopted, with the aim of promoting compliance, supporting the entry into force of the 1996 Protocol and generally encouraging integrated efforts for preventing marine pollution. In preparation for the entry into force of the 1996 Protocol, the Meeting established an intersessional correspondence group to develop an initial text for compliance procedures and mechanisms under the Protocol. It also agreed upon a set of draft procedures and criteria for determining and addressing emergency situations as referred to in articles 8 and 18.1.6 of the 1996 Protocol (i.e. situations posing an unacceptable threat to human health, safety or the marine environment) and decided to contribute to the establishment of a regular process for global reporting and assessment of the state of the marine environment, including socio-economic aspects (GMA), by making available the expertise of its Scientific Group in the field of marine monitoring and assessment.

187. *Radioactive waste*. The disposal at sea of radioactive material is prohibited by the London Convention 1972 and the 1996 Protocol. However, all materials, including those that can be disposed of at sea in accordance with the Convention, contain radionuclides of both natural and artificial origin. At the request of the London Convention 1972, IAEA has developed definitions, criteria and guidance to determine the levels of radioactivity in those materials under which they would not be regarded as radioactive. In October 2003, IAEA published IAEA-TECDOC-1375, entitled "Determining the suitability of materials for disposal at sea under the London Convention 1972: a radiological assessment procedure", which further elaborates the Agency's advice on the subject and contains guidance on how to perform an assessment to determine if levels of radioactivity in materials to be disposed of at sea meet the exemption criteria established by IAEA in support of the London Convention 1972.

188. *Hazardous wastes*. The Basel Convention on the Control of Transboundary Movements of Hazardous Wastes and their Disposal is relevant to oceans issues as it applies to the export of hazardous waste by sea. The Open-ended Working Group of the Basel Convention held its first and second sessions in 2003. The mandate of the Working Group is to assist the Conference of the Parties to the Basel Convention in developing and keeping under continuous review the implementation of the Convention's work plan, specific operational policies and decisions taken by the

Conference of the Parties for the implementation of the Convention. At its first session, the Group devoted itself to selecting the project proposals qualifying for funding under the Strategic Plan for 2003-2004 and preparing a number of guidelines on the management of various types of wastes, including persistent organic pollutants, metals and plastics. It also elected the 15 members of the committee which would administer the mechanism for promoting implementation of the provisions of the Convention and compliance with the obligations thereunder, established by the Conference of the Parties in its decision VI/32.[96] At its second session, the Group addressed, inter alia, the implementation of the Basel Protocol on Liability and Compensation; the preparation of an instruction manual for the implementation of the Protocol; and issues connected with ship recycling.

4. Ship recycling

189. Ship recycling or ship breaking is the process of dismantling an obsolete vessel's structure for scrapping or disposal. Conducted at a pier, dismantling slip, dry dock or on beaches, it includes a wide range of activities, from removing all gear and equipment to cutting down and recycling the ship's infrastructure. Due to the structural complexity of ships and the many environmental, safety and health issues involved,[97] ship breaking can be a very hazardous process. If conducted in an environmentally sound and safe manner, ship breaking can contribute to sustainable development by, inter alia, avoiding the scuttling of ships and providing for the recycling of steel. Currently, however, most of the world's ships are taken apart by hand on the beaches of developing countries, where intensive use of labour, low wages and low compliance with international standards make ship breaking an extremely dangerous process that may contaminate the environment with hazardous waste.

190. Developed countries are also facing difficulties in relation to ship breaking. An incident concerning a French aircraft carrier sent to Turkey for disposal and judicial decisions in the United Kingdom dealing with ships containing toxic substances imported from the United States[98] have raised concerns about the modalities for the import of ships containing toxic materials in the light of the international regulatory framework established under the Basel Convention. In view of the current trend towards the accelerated decommissioning of ageing tankers, the ship dismantling business is expected to expand rapidly. Three international organizations are considering regulatory issues relating to workers' safety, health and the environment in the context of ship dismantling within the limits of their respective mandates.

191. *International Maritime Organization*. In November 2003, the IMO Assembly adopted resolution A.962(23), entitled "IMO Guidelines on Ship Recycling". Based on the Industry Code of Practice on Ship Recycling,[99] these non-binding guidelines were developed to provide guidance to all stakeholders in the ship recycling process, including flag, port and recycling States, shipowners, shipbuilders, marine equipment suppliers and recycling facilities. It is implicit in the guidelines that while the obligation for environmental and worker protection in ship recycling facilities must rest with the recycling facility itself and with national regulatory authorities, shipowners and other stakeholders have a responsibility to address the issues involved.

192. Under the guidelines, shipowners, ship designers and shipbuilders are encouraged to make every effort to minimize the use and/or retention of potentially

hazardous materials on board their ships. When selecting a ship recycling facility, shipowners should consider any limitations the facility may have and should prepare the ship accordingly. A ship recycling plan should be developed by the recycling facility in consultation with shipowners, to ensure that a ship has been properly prepared prior to its recycling, that the safety of the ship has been taken into account and that wastes potentially contributing to pollution of the environment or potential hazards to worker health and safety are properly identified and handled. Also included are provisions for a "green passport", a document to accompany the ship providing ship details and information on materials known to be potentially hazardous which have been utilized in the construction of the ship, its equipment and systems, including their quantity and location. The IMO Assembly in the resolution requested the Marine Environment Protection Committee to keep the matter of ship recycling under review with a view to further developing the guidelines in the future, including the possibility of developing a mandatory regime.

193. *Basel Convention on the Control of Transboundary Movement of Hazardous Wastes and their Disposal*. Many materials used in the construction and operation of ships (asbestos, PCBs, oil residues, heavy metals, etc.) are classified as hazardous wastes. Since the practice of the maritime industry has been to export obsolete vessels for dismantling, the last voyage towards a scrap yard of ships carrying such materials comes under the regime set up under the Basel Convention. In consequence, in December 2002, the Conference of the Parties to the Basel Convention adopted the Technical Guidelines for the Environmentally Sound Management of the Full and Partial Dismantling of Ships, to provide guidance on procedures, processes and practices aimed at attaining environmentally sound management at ship dismantling facilities.[108] Legal aspects of ship dismantling were addressed by the Open-Ended Working Group of the Basel Convention at its second session, which mandated a report for the third session that will analyse, synthesize and indicate possible solutions regarding issues relating to the legal implications of ships becoming waste.

194. *International Labour Organization*. Pursuant to a decision of the Governing Body of ILO at its 285th session, an Interregional Tripartite Meeting of Experts on Safety and Health in Shipbreaking for Selected Asian Countries and Turkey was held in Bangkok from 7 to 14 October 2003. The meeting adopted guidelines on safety and health in shipbreaking. The practical recommendations contained in the guidelines are intended for use by all those with responsibility for occupational safety and health in ship-breaking operations. Although not legally binding, they provide guidance to those engaged in framing relevant provisions and systems, procedures and regulations where they do not exist.

195. *Inter-agency cooperation*. The Conference of the Parties to the Basel Convention at the sixth meeting requested the Convention secretariat, together with IMO and ILO, to explore the development of an inter-agency technical assistance project on ship dismantling and to consider the establishment of a joint working group in order to achieve a common understanding of the problem and the character of the required solutions. The proposal was welcomed by IMO and ILO, which agreed that such inter-agency cooperation and dialogue should continue. The Open-ended Working Group also addressed this issue and identified a number of elements for the terms of reference of the joint working group, including undertaking a comprehensive examination of a number of relevant international documents, such as the guidelines adopted respectively by the Basel Convention, ILO and IMO, with

a view to identifying possible gaps, overlaps, loopholes or ambiguities, as well as mechanisms to promote their implementation. To facilitate an exchange of views on these issues, the Open-ended Working Group invited IMO to organize a workshop in cooperation with ILO and the Basel Convention secretariat. A preliminary meeting of the three secretariats was held in Geneva on 13 and 14 January 2004.[101]

5. Regional cooperation

196. Currently, 18 marine and coastal regions benefit from regional cooperation to protect the marine environment. Fourteen of these are covered by legally binding instruments, while the others have adopted action plans or cooperative programmes.

(a) UNEP regional seas programmes

197. *Fifth Global Regional Seas Meeting*. UNEP has facilitated the negotiation of 12 regional seas programmes (conventions and action plans) in the developing world, the most recent of which was signed in the North-east Pacific in 2002. The 5th Global Meeting of the Regional Seas was held in Nairobi from 26 to 28 November 2003, with the main objective of developing a concrete strategy for meeting commitments of the decisions of the UNEP Governing Council at its twenty-second session, the Plan of Implementation of the World Summit on Sustainable Development, Agenda 21 and the Millennium Development Goals. The meeting agreed upon a new regional seas strategy, with the following main objectives: (a) increasing the contribution of the regional seas programmes to sustainable development, through national and regional partnerships with relevant social, economic and environmental actors; (b) enhancing the sustainability and effectiveness of the programmes by increasing country ownership, translating regional seas conventions into national legislation and regulations, involving civil society and the private sector and ensuring financial sustainability; (c) enhancing the programme's visibility in and political impact on global and regional policy-setting and ensuring participation and promotion of the regional seas programmes in relevant regional and global forums; (d) increasing the use of the programmes as a platform for developing common regional objectives and promoting synergies and coordinated regional implementation of relevant agreements and initiatives; (e) supporting knowledge-based policy-making and the development and implementation of relevant environmental legislation, improving knowledge of the state of the marine environment and enhancing public awareness; (f) promoting the development of a common vision and integrated management, based on the ecosystem approach, of priorities and concerns related to the coastal and marine environment in regional seas conventions and action plans; and (g) further developing the Regional Seas Coordination Office at UNEP in Nairobi as a support, liaison and information centre. The strategy also identifies a number of specific activities to be undertaken at the level of the individual regional seas convention and action plan as well as at the level of the Regional Seas Coordination Office.

198. A planning meeting on the development of a UNEP module for the assessment of the coastal and marine environment was held in Nairobi from 19 to 21 November 2003, with the aim of systematically organizing various existing assessments scattered within UNEP to best address user needs and gaps in coastal and marine assessment. The concept of a multi-purpose coastal and marine environment assessment module was developed on the basis of the science and the experience of the Global Environment Outlook, the Global International Waters Assessment, the

Millennium Ecosystem Assessment, GPA, the regional seas programme, the World Conservation Monitoring Centre as well as inputs from other organizations and scientific community, as part of the contribution of UNEP to the regular process of the global marine assessment.

199. Other salient issues in the work of the UNEP regional seas programmes during the reporting period included the initiation by the Regional Seas Coordination Office of a feasibility study on the development of a global initiative on marine litter; closer collaboration with regional fisheries bodies in order to achieve an ecosystem-based management approach to fisheries; and the development of a web-based information centre to further the implementation of the Regional Seas Strategic Directions 2004-2007. The UNEP regional seas programmes continued their collaboration with other organizations such as the IAEA Marine Environment Laboratorium, IMO, IOC/UNESCO, GEF and FAO.

(b) OSPAR and Helsinki Commissions

200. *First Helsinki/OSPAR Joint Ministerial Meeting*. Ministerial representatives from 20 countries and the European Community worked together at the first HELCOM/OSPAR Joint Ministerial Meeting, held at Bremen, Germany, on 25 and 26 June 2003. Three themes were emphasized: the need for an ecosystem approach to the management of human activities that affect the marine environment; cooperation between the OSPAR and Helsinki Commissions in the development of the European Union initiative for a European Marine Strategy; and the need for joint action to protect threatened and declining species and habitats. The ministers pledged themselves to create by 2010 an ecologically coherent network of well-managed marine protected areas covering the North-East Atlantic and the Baltic Sea. In addition, they considered the environmental impact of fisheries and shipping. With regard to the former, they emphasized the usefulness of the ecosystem approach and identified particular issues requiring the collaboration of fisheries management and environmental protection. In connection with shipping, they recognized the importance of improving both maritime safety and the safeguards against the impact of shipping incidents (such as additional requirements for the use of double hulls) for the control and prevention of such threats to the marine environment. The two Commissions also held independent ministerial meetings to discuss issues of importance to their particular regions.

201. *Baltic Marine Environment Protection Commission (HELCOM)*. The HELCOM Ministerial Meeting (25 June 2003, Bremen, Germany) gave special emphasis to the changes in environmental regulations that are likely to occur in connection with the forthcoming accession of new members to the European Union (EU). Beginning May 2004, eight of the nine countries around the shores of the Baltic Sea will be members of the Union. In response to the steadily rising risk of oil pollution in the Baltic and the persistent symptoms of eutrophication, the Ministers of Environment and other high-level representatives of the countries around the Baltic Sea and of the European Community unanimously adopted a Ministerial Declaration and 10 new HELCOM Recommendations. In the declaration, HELCOM prioritized safe navigation and emergency-response capacity, the curbing of deliberate illegal oil discharges and the examination of the possibilities of designating the Baltic Sea as a particularly sensitive sea area by IMO (see paras. 176-178). Combating eutrophication, improving nature conservation and the protection of biodiversity, eliminating pollution hot spots and improving

compliance with existing legislation were also emphasized. The recommendations focused on pollution at sea, pollution from land, monitoring and assessment, and integrated management of human activities in coastal areas and at sea. The ministers agreed that HELCOM should continue to serve as the focal point in the Baltic Sea region on issues related to environmental protection and indicated that areas of special priority should include joint monitoring and assessment of the state of the Baltic marine environment, nature conservation, eutrophication, hazardous substances and maritime safety.

202. *Commission for the Protection of the Marine Environment of the North-East Atlantic (OSPAR).* OSPAR held its second Ministerial Meeting on 25 June 2003 in Bremen, Germany, to review progress on its strategies on biodiversity and ecosystems, eutrophication, hazardous substances, the offshore oil and gas industry and radioactive substances. The meeting adopted revised strategies on all these issues, together with a new strategy on the Joint Assessment and Monitoring Programme to prepare for the next OSPAR overall assessment of the North-East Atlantic in 2010. OSPAR reviewed the progress of the programme for the implementation of the Radioactive Substances Strategy. It welcomed the fact that all Contracting Parties had developed detailed national plans for implementation and settled a baseline, with a reference period of 1995-2001, for measuring progress towards the objective of the Strategy. The meeting endorsed the recommendation that ensures that all offshore installations in the OSPAR area have, by 2005, environmental management systems that meet the highest international standards. Finally, OSPAR identified 27 species and 10 types of habitat in need of protection and established the basis in its area for the network of marine protected areas. The ministers further addressed the candidate list of human activities capable of causing adverse impacts on the marine environment.

(c) Polar areas

203. *Arctic Council.* During the period under review, the Arctic Council developed a strategic plan for the protection of the Arctic marine environment which had been initiated by the ministers the previous year. The new strategy is based on an integrated approach to sustainable ocean management, with the aim of setting priorities and developing and linking existing principles. An integrated approach would include partnerships among the different Arctic Council working groups as well as with external partners and would also provide links to other international initiatives, such as the UNEP regional seas programme, the EU Marine Strategy and the London Convention. The Arctic Council has begun a comprehensive and wide ranging assessment of the potential socio-economic, human-health and environmental impacts of oil and gas activities in the Arctic. The Arctic Monitoring and Assessment Programme Working Group will organize this assessment with added expertise from the other Arctic Council working groups. In addition, the Arctic Council continued its work on the Arctic Climate Impact Assessment, which is aimed at providing information on policy options to deal with such issues as climate change and increased ultraviolet radiation. Finally, through its Working Group for the Protection of the Marine Environment, the Arctic Council continued to support the implementation and further development of the Regional Programme of Action for the Protection of the Arctic Marine Environment from Land-based Activities and of the national plans as important components thereof.

204. *Antarctic Treaty*. In 2003, the 26th Antarctic Treaty Consultative Meeting (ATCM), held in Madrid from 9 to 20 June, adopted a number of measures, decisions and recommendations pertaining to the protection of the fragile Antarctic marine environment. In measure 2 (2003), Governments were advised to approve management plans for several Antarctic specially protected areas; in resolution 1 (2003), parties that published advice to seafarers were recommended to ensure that details on the Protocol on Environmental Protection to the Antarctic Treaty (1998) and its annex IV were included in such publications; in resolution 3 (2003), parties were recommended to encourage their national authorities to coordinate their hydrographic survey and charting activities through the IHO Hydrographic Committee on Antarctica; and in resolution 4 (2003), Parties were encouraged to ratify the Agreement on the Conservation of Albatrosses and Petrels. Finally, the Consultative Meeting made substantial progress on the establishment of its secretariat in Buenos Aires.

B. Conservation and management of marine living resources

1. Fisheries

(a) Overview of the status of world marine fisheries

205. According to FAO, the global situation of the marine fish stocks for which information is available has continued to deteriorate. As fishing pressure has increased, the percentage of underexploited and moderately exploited fisheries resources has declined: 47 per cent of major fish stocks are now fully exploited, having reached their maximum sustainable limits, 18 per cent are overexploited, with no prospect for expansion or increased production, and the remaining 10 per cent are significantly depleted.[102]

206. The current state of the living resources is the result of widespread exploitation at levels higher than safe catch limits, as well as of the failure of fishing authorities to set sustainable limits on the basis of scientific advice, and also of their failure to ensure compliance with fishing regulations, including enforcement of technical measures such as mesh sizes, closed areas or closed seasons. Another contributing factor was the prevailing belief of both fishers and fisheries authorities that there was no reason to limit catches, as the resources could be "mined" indefinitely.[103] Consequently, in some fisheries mature fish have become so rare that juveniles have to be fished down in order to retain economic benefits from fishing activities. Many scientists consider that if current levels of exploitation are maintained, not only would the commercial extinction of fish stocks soon become a reality, but the long-term biological sustainability of many fish stocks would also be threatened.

207. In contrast, long-term fish market forecast studies based on economic models of demand, trade and supply of fish in the main markets have indicated that total consumption, food demand and per capita food consumption of fish will increase over the next three decades, although the rates of increase will eventually slow over time. They also indicated that consumption patterns would involve demand for and imports of high-cost/high-value species of seafood into developed countries from developing countries, which would in turn import low-cost/low-value species.

According to these studies, while world capture fisheries are expected to stagnate, world aquaculture production is projected to increase.[104]

208. In view of the key role played by fisheries in economic development, food security, poverty alleviation and human health, and since current levels of fisheries exploitation do not fulfil the criterion of sustainable development as "development that meets the needs of the present without compromising the ability of future generations to meet their own needs",[105] it is imperative for Governments to resolve conflicts in different uses of the sea and to implement the integrated management of marine areas in order to ensure compatibility and balance of uses and to address the root causes of overfishing.

(b) Causes of marine capture fisheries depletion

209. Despite the adoption of various international instruments designed to ensure the sustainability of fisheries resources, many fishing activities are not still being conducted in a responsible manner. Overfishing is caused by a combination of factors, among them: overcapacity; illegal, unreported and unregulated fishing (IUU fishing), unreliable fisheries information, data and statistics; and unsustainable fishing practices, including the use of non-selective fishing gear that adversely affects juvenile fish, dependent and associated species.

210. *IUU fishing*. Many important fish stocks are being undermined by high levels of IUU fishing motivated by economic gain. Experience has shown that IUU fishing is not confined to any particular group of fishers, but is widely practised in fisheries, both within exclusive economic zones and on the high seas, where the prospects for apprehension are the lowest, as well as by fishers operating vessels not subject to effective flag State control.[106] Increases in demand for fish and fish products in all parts of the world have made such unsustainable fishing practices lucrative and attractive to unscrupulous operators and vessel owners. Moreover, many fishing vessels are registered in States not party to regional fishery management organizations which therefore do not consider themselves bound by high seas fishery regulations. Any effort to combat IUU fishing must take these factors into account and integrate them into wider fishery policy developments and initiatives.[107]

211. FAO has been at the forefront of many efforts to ensure the implementation of its International Plan of Action to Prevent, Deter and Eliminate Illegal, Unreported and Unregulated Fishing (IPOA-IUU), including the organization of regional workshops[108] and assistance to developing States for capacity-building.[109] In September 2003, FAO convened in Miami, United States, an Expert Consultation on Fishing Vessels Operating under Open Registries and their Impact on Illegal, Unreported and Unregulated Fishing, in recognition of the central role played by fishing vessels operating under open registries and flying "flags of convenience", or more accurately "flags of non-compliance" in the perpetration of IUU fishing activities. The Consultation agreed on a number of recommendations addressed to all States — coastal States, port States and flag States (especially those operating open registries) — for more effective flag State control over fishing vessels, as a means of reducing IUU fishing. The recommendations will be presented to the FAO Technical Consultation on IUU fishing and fleet capacity to be convened by FAO in June 2004.

212. *Overcapacity and excess fishing capacity*. Excessive fishing capacity has contributed substantially to overfishing, the degradation of marine resources, the

decline of food production potential and significant economic waste. Fishing capacity is the capability of a fishing fleet, if fully utilized, to catch a certain number of fish in a certain period of time, given the biomass and age structure of the fish stock and the current state of the technology.[110] Overcapacity could therefore be defined as a situation where technical capacity was greater than total sustainable catch.[111] Fleet overcapacity would therefore exceed the harvesting level required to ensure the long-term sustainability of the stock and the fishery.[112] It would also lead to IUU fishing.

213. One of major causes of overcapacity leading to excess fishing capacity[113] and overfishing in most marine capture fisheries is the payment of subsidies to the fishing industry, for such purposes as (a) building more fishing vessels or increasing the capacity of existing vessels, (b) reducing the cost of producing and marketing fish (cost-reducing subsidies) or (c) increasing the revenue from producing and marketing fish (revenue-enhancing subsidies).[114] One solution to the problem is the buy-back of fishing vessels by Governments.

214. FAO has continued to monitor progress in the implementation of the 1999 IPOA-Capacity and to assist States through the dissemination of technical documentation relating to measurement, the assessment of aspects of fishing capacity and the development of policies with selected regional fishery management organizations for the management of capacity. Other activities include case studies on the management of fishing capacity in Latin America; the review of major vessel buy-back schemes undertaken in connection with capacity reduction and the organization of a regional workshop on access regulation and fishing capacity management in West Africa.

215. *Unreliable information and data on marine capture fisheries*. As in all forms of management, the management of capture fisheries involves synthesizing information, analysis and decision-making.[115] Effective management of marine capture fisheries has been hindered by unreliable information and data caused by unreported and misreported fish catch and fishing effort. In fact, the lack of reliable information on exploited fish stocks and on the fishing pressure exerted on them can contribute to overfishing and might in some circumstances lead to the collapse of such stocks. Another important factor to be taken into account in determining sustainable catch levels is natural environmental variability, plus human-induced changes caused by climate change and marine pollution. Without reliable information on the resource and its environment, it is impossible to reach supportable decisions, diagnose the state of a fishery or predict the effects of management control.[116]

216. Despite the efforts of FAO to improve fishery data, those which are available are not fully reliable in terms of coverage, timeliness and quality.[117] Problems are also created by the unhelpful behaviour of fishing vessels registered in States exercising no effective control, which frequently fail to report landings or report only very low landings as they have not landed their catches in their home countries or ports and are not required to report catches to the flag State.[118] In response to global concerns about the reliability of fisheries statistics, the FAO Committee on Fisheries at its twenty-fifth session in 2003 adopted the FAO Strategy for Improving Information on Status and Trends of Capture Fisheries. The objective of the Strategy is to provide a framework, strategy and plan for the improvement of knowledge and understanding of fishery status and trends as a basis for fisheries policy-making and

management for the conservation and sustainable use of fishery resources within ecosystems.[119]

217. *Use of non-selective fishing gear and unsustainable fishing practices.* A recent study of by-catch and discards estimated that between 17.9 and 39.5 million tons of fish were discarded annually from commercial fisheries, representing approximately one quarter of the total world fish catch.[120] A serious aspect of by-catch is the amount of juvenile fish caught in fishing operations by non-selective fishing gear, along with other non-target species, which could lead to a lack of mature fish available to reproduce. Concerns over the adverse impacts of non-selective fishing gear on marine ecosystems expressed in various instruments, including the Code of Conduct for Responsible Fisheries,[121] relevant fisheries-related resolutions of the United Nations General Assembly[122] and the 1995 United Nations Fish Stocks Agreement,[123] have resulted in the development of technical regulations in many fisheries governing the use of more selective fishing gear, with the aim of reducing by-catch of juvenile fish.[124] Other technical regulations mandate the establishment of area and seasonal closures, prohibiting fishing during particular periods or in particular areas[125] in which fish gather to reproduce.[126]

(c) *Consequences of overfishing in marine capture fisheries*

218. Overfishing of traditionally exploited marine fish species has led to the development of aquaculture in coastal and marine areas (mariculture) as well as deep-sea fisheries on continental slopes and rises, canyons and seabed trenches, seamounts, oceanic and volcanic ridges, and the abyssal plains. While the aim of aquaculture is to replace capture fisheries and meet future demand in fish consumption, deep-sea fisheries represent the new frontier in fisheries production, targeting long-lived and slow-growing species, before ichthyologists and other concerned scientists have had a chance to identify and study them.

219. *Aquaculture.* Aquaculture has been defined as the "farming of aquatic organisms, including fish, mollusks and crustaceans and aquatic plants".[127] New approaches in aquaculture include cage-farming of fish in South-East Asia,[128] the growing practice in the Mediterranean Basin of net cage farms for bluefin tuna fattening,[129] and ocean-ranching, practised in Iceland, Japan and the United States,[130] in which juvenile fish are released into the ocean to grow to be subsequently harvested. FAO statistics indicate that the contribution of aquaculture to global fish supplies continued to increase from 3.9 per cent of total production by weight in 1970 to 27.3 per cent in 2000. Worldwide, the sector has increased an average of 9.2 per cent per year since 1970, compared with only 1.4 per cent for capture fisheries. In developing countries, aquaculture has been growing steadily since 1970, enhancing its potential for local food security, poverty alleviation and rural livelihood improvement.[131] The importance of aquaculture led FAO to convene in 2000 a conference on "Aquaculture and the Third Millennium", addressing the role of this sector and the main issues affecting its development.[132]

220. The main area for the future growth of aquaculture appears to lie in the sea, particularly in offshore areas.[133] In 2000, more than half of global aquaculture production originated in marine or brackish coastal waters.[134] Nevertheless, serious environmental and health problems are associated with aquaculture, such as the ecological impacts of escaping farmed fish mating with wild fish, thereby altering the genetic make-up of the population; infestations of parasites in farmed fish

spreading to nearby wild stocks; marine pollution caused by chemicals used on farmed fish; and impacts on human health from chemicals such as antibiotics and persistent organic pollutants. In the view of experts, although aquaculture has some advantages over capture fisheries, it must address these harmful effects.[73] On 20 February 2004, the Conference of the Parties to the Convention on Biological Diversity adopted a decision on this issue (see para. 223).

221. *Development of deep-sea fisheries.* With the recent advances in fishing technologies and the resultant increases in fisheries efficiency, there are few remaining refuges for those deep-sea species that are fished around seamounts. Seamounts are independent features that rise at least 1,000m above the seafloor, some of them supporting unusually productive ecosystems and endemic species[74] that are exceptionally long-lived and slow to mature.[75] The biological characteristics of deep-sea species, the fragility of the habitats where they are most abundant, the poor management of these species by the fishing industry to date and the warning signs provided by the collapse of depleted inshore fisheries are the cause of increased concern for the sustainability of deep-sea fisheries in general,[76] which are being conducted largely in ignorance of such ecosystems and their response to fishing activities. In this respect, a "Statement of concern" (Coos Bay Statement) concerning the risks caused by deep-sea fisheries to seamounts, cold-water corals and other vulnerable deep-sea ecosystems was addressed to the Secretary-General by a group of deep-sea biologists in October 2003. They recommended, inter alia, the promotion of non-commercial research, the development of representative networks of marine protected areas and the designation of "science priority areas" in those deep-sea ecosystems. Another problem arises the adverse impact of bottom-net trawling on deep-sea ecosystems and biodiversity as they scrape the ocean floor, destroying everything in their way, especially fragile and productive coral reefs,[77] prompting calls for the establishment of marine protected areas and even the adoption of a global moratorium on fishing activities around deep-sea seamounts, pending the negotiation of a more permanent solution.[78]

222. These issues were considered at the "Deep Sea 2003 Conference" convened by New Zealand, in cooperation with FAO, from 1 to 5 December 2003, to provide a basis for the coordination and synergy of research and management efforts targeted at deep-sea fisheries and to make significant progress in mapping the future directions required for successful governance and management in relation to existing and anticipated international instruments. Proposals included the possible adoption of new binding or voluntary instruments, guidelines, amendments to existing international instruments, resolutions of the United Nations General Assembly, amendments to UNCLOS as from 2004, new UNCLOS implementing agreements, the establishment of global fisheries bodies and expanding the mandate of existing regional fishery management organizations. Despite the variety of these suggestions, there was a convergence of views that any initiative addressing deep-sea fisheries should be undertaken within the framework of UNCLOS.

2. Biological diversity

223. The Seventh Meeting of the Conference of the Parties to the Convention on Biological Diversity was held in Kuala Lumpur from 9 to 20 February 2004. On marine and coastal biodiversity, the meeting adopted decision UNEP/CBD/COP/VII/5, containing sections on the review of the programme of

work on marine and coastal biodiversity; marine and coastal protected areas (MCPAs); mariculture; deep seabed genetic resources beyond national jurisdiction; and the conservation and sustainable use of biodiversity in marine areas beyond the limits of national jurisdiction. The decision includes annexes on the elaborated work programme; guidance for national marine and coastal biodiversity management frameworks; and the improvement of available data for assessment towards the global goal.

224. Noting the increasing but still low level of development of marine and coastal protected areas, the Conference of the Parties agreed that the goal for work related to MCPAs under the Convention should be the establishment and maintenance of MCPAs that are effectively managed and ecologically based and that contribute to a global network of MCPAs, building upon national and regional systems and including a range of levels of protection. The meeting agreed on the establishment of a national framework of MCPAs but also underlined the urgent need for international cooperation and action to improve the conservation and sustainable use of biodiversity in marine areas beyond the limits of national jurisdiction, including through the establishment of marine protected areas consistent with international law and based on scientific information. In that regard, the Conference of the Parties recognized that the law of the sea, in particular UNCLOS, provided the legal framework and requested the Executive Secretary to urgently collaborate with the Secretary-General of the United Nations and with other relevant bodies on the report called for in paragraph 52 of General Assembly resolution 58/240. Aspects related to marine and coastal protected areas were to be considered an integral part of the Convention's programme of work on protected areas also agreed upon by the meeting.[41]

225. Regarding mariculture, the Conference, taking note of both its negative and its positive effects on biodiversity, urged parties to adopt relevant methods and techniques for avoiding the adverse effects of mariculture on marine and coastal biological diversity and to incorporate them into their national biodiversity strategies and action plans. A number of such methods, techniques and practices were specified.

226. On conservation and sustainable use of deep seabed genetic resources beyond national jurisdiction, the Conference of the Parties requested the Executive Secretary, in consultation with the International Seabed Authority and in collaboration with other relevant international organizations, to compile information on methods for the identification, assessment and monitoring of seabed genetic resources in areas beyond national jurisdiction as well as on their status and trends, including the identification of threats to such genetic resources and the technical options for their protection. The General Assembly was invited to further coordinate work relating to the conservation and sustainable use of the genetic resources of the deep seabed beyond the limits of national jurisdiction, and parties to the Convention on Biological Diversity were requested to identify activities and processes under their jurisdiction or control which might have a significant adverse impact on deep seabed ecosystems and species beyond national jurisdiction.

227. On the issue of the conservation and sustainable use of biodiversity in marine areas beyond the limits of national jurisdiction, and in particular areas with seamounts, hydrothermal vents, cold-water corals, other vulnerable ecosystems and certain other underwater features, the Conference noted the relevant paragraphs in

General Assembly resolution 58/240. It called upon the General Assembly and other relevant organizations to urgently take the necessary short-term, medium-term and long-term measures to eliminate/avoid destructive practices, consistent with international law and based on scientific information, including the application of precaution. Possible measures were identified, such as the interim prohibition of destructive practices adversely impacting the marine biological diversity associated with those ecosystems, but it was emphasized that they should be applied on a case-by-case basis.

228. The programme of work, as contained in annex I to the decision, includes elements on integrated marine and coastal area management, marine and coastal living resources, MCPAs, mariculture and invasive alien species. It establishes a number of enabling activities, addressing the need to provide technical and financial assistance and capacity-building and increasing the level of scientific, technical and technological collaboration, and it sets a timetable — 2004-2010 — after which the programme of work will be reviewed. Five appendices to the programme of work establish a work-plan for coral bleaching; elements of a work-plan on coral reefs; elements of a marine and coastal biodiversity management framework; research priorities for MCPAs; and research and monitoring priorities for mariculture.

IX. New sustainable uses of the oceans, including the conservation and management of the biological diversity of the seabed in areas beyond national jurisdiction

A. Conservation and management of the biological diversity of the seabed in areas beyond national jurisdiction

229. In recent years, increasing awareness of the rich biological diversity of the seabed beyond the limits of national jurisdiction and concerns regarding the threat posed to it by human activities have led to closer examination of the existing conservation and management arrangements.

230. The Plan of Implementation of the World Summit on Sustainable Development recommended that the conservation and management of the oceans should be promoted giving due regard to the relevant instruments "to maintain the productivity and biodiversity of important and vulnerable marine and coastal areas, including in areas within and beyond national jurisdiction", and to "develop and facilitate the use of diverse approaches and tools, including the ecosystem approach, the elimination of destructive fishing practices, the establishment of marine protected areas consistent with international law and based on scientific information, including representative networks by 2012".[142]

231. On the basis of recommendations adopted by the Consultative Process at its fourth meeting,[143] the United Nations General Assembly has reiterated the urgent need for the international community to address issues relating to the biodiversity beyond national jurisdiction and in particular the need to consider "ways to integrate and improve, on a scientific basis, the management of risks to the marine biodiversity of seamounts, cold-water coral reefs and certain other underwater features".[144] The Assembly also reaffirmed[145] the recommendation of the World Summit on Sustainable Development in paragraph 32 (c) of the Johannesburg Plan

of Implementation[46] which was also contained in the recommendations of the Consultative Process at its fourth meeting in June 2003.[47]

232. The issue of the biodiversity of the seabed beyond national jurisdiction has also been discussed in the context of the Convention on Biological Diversity. On the basis of the work of its Subsidiary Body on Scientific, Technical and Technological Advice, the Seventh Meeting of the Conference of the Parties adopted a number of decisions relevant to this issue (see paras. 223-228).

1. Description of the ecosystems on the deep seabed

233. Marine biodiversity is a vast reserve of economically, scientifically and environmentally valuable compounds, materials and organisms. Until recently, the attention of scientists and policy makers has focused on coastal ecosystems. Deep ocean areas are still very little known and for a long time they have been likened to a desert in terms of species diversity. It used to be believed that sources of productivity in the deep oceans were limited to material sinking from above, since no other source of energy and carbon was known.

234. In 1977, scientists discovered a unique ecosystem at sites where high-temperature fluids rich in reduced compounds pour out into the water column. Later research led to the discovery of other deep sea benthic ecosystems characterized by energy sources other than light, such as sediment communities and seep communities (including hydrothermal vents, petroleum seeps and sediment-pore water seeps). Nowadays it is estimated that the seabed beyond the continental margin may be home to 10 million species of organisms. Other recent discoveries of biodiversity hot spots in the deep oceans include seamounts and cold and deep water corals.

235. *Seamounts*. Seamounts are underwater volcanic peaks that rise more than 1,000 metres above the neighbouring ocean floor. There are from 10,000 to 30,000 seamounts worldwide, distributed through all ocean basins. They are considered to be biological hot spots, with high species diversity and endemism. Hard substrate suspension feeding communities, such as sponges and corals, dominate the benthic fauna of seamounts. Corals generally occur on the most exposed portions of the seamount, where water currents are strongest. Some 600 invertebrate species have been recorded in seamounts, and many fish species are abundant around them.[48] Scientific exploration around seamounts is still in the initial stages; very few seamounts have been thoroughly investigated and biological sampling has been scanty. Seamount communities are complex and variable; two seamounts at the same depth can have completely different biological components. Their make-up and characteristics are determined by current patterns, topography, bottom sediment and rock types and coverage, seamount size, water depth and seawater oxygen content.

236. Seamounts are under increasing pressure from fishing. Benthic communities on seamounts have been impacted by physical damage from trawl fisheries.[49] In future, there may also be adverse impacts on seamounts from mining of manganese crusts, but mining activities have not yet commenced. The International Seabed Authority is the competent organization to manage the risks posed to biodiversity by mining activities in the Area (see paras. 263-266).

237. *Cold and deep water corals*. In the absence of light and the presence of higher levels of nutrition, deep-water coral ecosystems function differently from shallow-water corals. Deep-water coral ecosystems attract an as yet unknown number of species, large numbers of which may have economic value. Because fishers have been exploiting these vulnerable ecosystems for a long time, many deep-water coral ecosystems are already irreversibly damaged.[150] In fact, although their existence has been known for centuries, only the increased deployment of modern oceanographic and seabed survey methodologies over the past decade has allowed a closer examination of these ecosystems. Deep-water corals were historically known as attractive fishing places and they are expected to be important nursery areas for a number of species. Recent observations have shown that an alarming number of these corals are damaged or totally destroyed, most likely by human activities and especially bottom trawl fishing.[151]

238. A group of 1,136 scientists recently released a consensus statement calling upon the United Nations to urgently protect imperilled deep-sea coral and sponge ecosystems. The main threats identified include seabed mining, climate change and, above all, bottom trawling.[152]

239. *Hydrothermal vents*. Hydrothermal vents are mineral-rich regions in the ocean floor, present at depths of 1,800 to 3,700 metres and characterized by the ejection of superheated water saturated with minerals from underlying magma.[153] They are rich in polymetallic sulphides, the primary substance supporting the unique vent ecosystem through a process called chemosynthesis. Biological productivity at hydrothermal vents is sustained not by photosynthetic products arriving from the sunlit surface ocean, but rather by the chemosynthesis of organic matter by vent micro-organisms which use energy from chemical oxidations to produce organic matter from CO_2 and mineral nutrients. The organic matter is then consumed by various organisms with the help of sulphide-oxidizing bacteria that live either in symbiosis with the vent fauna or in the surrounding environment. Vent ecosystems are therefore ultimately powered by heat from the earth's mantle.[154]

240. Vent ecosystems include both micro- and macro-organisms such as giant tubeworms, clams, shrimps, crabs and mussels clustering around hydrothermal vents at a depth of 2,000m. Vent faunal biomass is now estimated to be 500 to 1,000 times that of the surrounding deep sea and rivals values in the most productive marine ecosystems such as shellfish cultures. Hydrothermal vents may be considered as isolated "biological" islands. About 90 per cent of the species described from vents to date are endemic.

241. *Polymetallic nodules*. Some forms of polymetallic nodules are inhabited by diverse organisms, including bacteria, protozoa and metazoa. The nodules provide an environment that enhances local and regional diversity. When the nodules begin to be exploited commercially, in order to achieve economically viable nodule mining, thousands of square kilometres of relatively flat seabed will be subject to dredging that may harm bottom-dwelling organisms. Therefore deep-sea mining of polymetallic nodules is likely to have an impact on deep-sea benthic and pelagic communities.

242. *Cold seeps and pockmarks*. The only other known exception to the rarefaction of benthic biodiversity is that of communities existing in deep-ocean sediments associated with petroleum seeps. Cold seeps and pockmarks are sites where low-temperature fluids escape from the seabed. Seep fluids may be hydrocarbon,

hydrothermal or volcanic in origin or may simply represent a groundwater escape. Research expeditions drilling to 5,000 meters have discovered the presence of chemolithotrophic micro-organisms, apparently living off the carbon and energy sources provided by the petroleum. Besides these microbes living within deep-ocean sediments, other organisms found in these areas include tube worms, mussels, snails, eels, crabs and fish.[172] These are highly specialized organisms, of relatively low diversity, but high endemism. The great majority of seep fauna are endemic to single seep sites and to the seep ecosystem.[173]

243. Bacteria from seeps contain novel genes that may be useful to the biotechnology industry. For example, applications such as the treatment of oil pollution (bioremediation) may be of particular interest. Seepages may be used as a prospecting tool for the petroleum industry and may also become subject to direct exploitation in the future if high-grade mineral-laden fluids expelled from the deep seabed can be tapped. Several patents exist for the direct harvest of seepage minerals from point sources on the seabed.[174]

244. *Gas hydrates.* Gas hydrates consist mainly of methane gas housed within the crystalline cage structure of ice. The gas is packed at very high densities, amounting to around 160 times greater densities than gas at normal atmospheric pressures. Methane is produced primarily by microbial and thermogenic processes. In the microbial process, the organic debris of the depositing sediments is decomposed by a complex sequence (methanogenesis) into methane by bacteria in an anoxic environment. In the thermogenic process, thermal cracking of organically derived materials takes place to form petroleum hydrocarbons (including methane). This generally occurs at considerable depth (>2km) in sedimentary basins where temperatures exceed 100°C. The associated fauna are little known. However, recent studies have identified the presence of bacteria at depths of over 800m below the seafloor in marine sediments in the Pacific Ocean. It is estimated that about 60 per cent of all bacteria on earth live in sub-seafloor sediments. Polychaete worms have also been found in exposed gas hydrate in the Gulf of Mexico.[175]

2. Threats to the ecosystems

245. Human knowledge of hydrothermal vents is still in its early stages. Evidence suggests that these unique ecosystems exist in a realm with naturally occurring, violently disruptive events that can threaten the existence of the existing communities at any given time. Human activities can also have disruptive effect: while seamounts and cold coral reefs are mainly threatened by fishing activities, the communities surrounding the other deep-sea benthic ecosystems, and in particular hydrothermal vent ecosystems, are threatened primarily by scientific research, bioprospecting activities and, potentially, by deep seabed mining.

246. Impacts arising from scientific studies include direct impacts leading to habitat loss and organism mortality. Research activities with a negative impact on ecosystems include: the removal of chimneys and rocks for geological investigations or chemical sampling; environmental manipulation, such as drilling, which can change fluid flow pathways and shut off the supply of fluids to colonies of vent organisms; the clearing of fauna, e.g. for experimental studies on recolonization or the collection of fauna for biodiversity or population studies; the transplanting of fauna between locations; the placement of instruments that may disturb fauna and change water flows; the deleterious effects of light used for

observation purposes on photosensitive organisms; and the use of manned submersibles and remotely operated vehicles which can damage fauna by landing on them or causing damage by the use of thrusters. These activities can have biological consequences, such as a decrease in population numbers; local, regional or global extinction of species; a change in community structure; or the introduction of exotic species carried by underwater vehicles from another site.[159]

247. The discovery of deep seabed communities has also opened opportunities for bioprospecting of these chemosynthetic organisms, characterized by a molecular structure allowing them to live in water exceeding 100°C and at extremely high pressure (extremophiles). Due to the species' robust nature (e.g. their enzymes can be exposed to harsh conditions and high temperature), extremophiles are used in a number of industrial processes, ranging from liposomes for drug delivery and cosmetics to waste treatment, molecular biology, and food and agricultural processes. It appears that the commercial use of naturally occurring extremophiles is likely to increase in the near future.[160]

248. Research/bioprospecting efforts often involve repeated sampling, observation and instrumentation at a small number of well-known sites, in particular hydrothermal vent sites. In the case of micro-organisms, initial collections for screening purposes require relatively small amounts of organisms; moreover, improved techniques recently developed have considerably reduced the amount of biomass needed to study the structure of a molecule. For other types of samples, particularly invertebrates, sample collection might need to be repeated several times. The sampling of tissue mass may be harmful to local populations of small species whose geographical distribution may be either unknown or very restricted. It may be necessary to introduce precautionary measures aimed at avoiding significant loss of habitat or oversampling of populations.[161]

249. In the light of the threats posed to deep seabed ecosystems, and in particular hydrothermal vents, by marine scientific research and seabed tourism the InterRidge Biology Working Group is developing a code of conduct for the sustainable use of hydrothermal vent sites by researchers and tour operators. The code will consist of a statement of principles applicable to marine scientific research and seabed tourism activities, followed by a corresponding set of operating guidelines applicable to organizations and individuals carrying out activities around those ecosystems. The guidelines could function as benchmarks against which to assess the performance of the organizations undertaking marine scientific research and their affiliated researchers, as well as tour operators. They could also provide principles for the development of institutional environmental management systems or for the elaboration or application by regulatory agencies of regulatory procedures (e.g. for vessel clearance) or conservation measures (e.g. marine protected areas).[162]

3. Legal framework for the conservation and management of biodiversity of the seabed beyond national jurisdiction[163]

250. *United Nations Convention on the Law of the Sea.* Although the conservation and management of the biodiversity of the seabed beyond national jurisdiction is not directly addressed in UNCLOS, the Convention contains some provisions that could be applied to the issue. The provisions for the protection of the marine environment, for the conservation of marine living resources and other forms of marine life, as well as for the protection of rare and fragile ecosystems provide a basis for the

conservation and sustainable use of the biodiversity of the deep seabed. Other relevant provisions include the rules for the exploration and exploitation of mineral resources on the seabed beyond the limits of national jurisdiction, including those elaborated by the International Seabed Authority, and for marine scientific research.

251. UNCLOS establishes different regimes for resources found in areas beyond national jurisdiction, namely the high seas and the Area. On the high seas, all States enjoy certain freedoms of the high seas, which include the freedom of fishing and of marine scientific research. However, these freedoms must be exercised with due regard for the interests of other States as well as with due regard for the rights under the UNCLOS with respect to activities in the Area.[164] UNCLOS also provides that States have to cooperate for the conservation and management of the living resources of the high seas, in particular in relation to fishing activities. States are required to take measures, based on the best scientific evidence, to maintain or restore populations of harvested species at levels which can produce the maximum sustainable yield and take into consideration the effects on species associated with or dependent upon harvested species with a view to maintaining or restoring populations of such species above levels at which their reproduction may become seriously threatened. These provisions are relevant to the conservation of the biodiversity of seamounts and cold-water coral reefs threatened by fishing activities, and in particular bottom trawling.

252. The Area is defined by UNCLOS as the seabed and ocean floor and the subsoil thereof, beyond the limits of national jurisdiction. The Area and its resources are the common heritage of mankind, the exploration and exploitation of which must be carried out for the benefit of mankind as a whole.[165] Part XI of UNCLOS and the Agreement relating to the implementation of Part XI provide the legal regime for the Area, in particular for activities relating to its mineral resources. For the purposes of Part XI, resources are "solid, liquid or gaseous mineral resources in situ in the Area at or beneath the seabed, including polymetallic nodules".[166]

253. No specific provisions of UNCLOS apply to the conservation and management of the biodiversity of the Area, except those regulating marine scientific research and the protection and preservation of the flora and fauna from activities relating to mineral resources.

254. Marine scientific research constitutes one of the freedoms of the high seas recognized for all States by UNCLOS.[167] Nevertheless, in accordance with the general principles set out in Parts XII and XIII, such research must be conducted in such a way as to preserve and protect the marine environment. In the Area, all States and competent international organizations have the right to conduct marine scientific research, in conformity with the provisions of Part XI of UNCLOS,[168] which provides that marine scientific research concerning the Area and its resources shall be carried out exclusively for peaceful purposes and for the benefit of mankind as a whole.[169] For this purpose, the Convention requires the International Seabed Authority to promote and encourage the conduct of marine scientific research in the Area and to coordinate and disseminate the results of such research and analysis.

255. Other relevant provisions for the conservation and management of biodiversity beyond national jurisdiction include those relating to the protection and preservation of the marine environment. Part XII of UNCLOS imposes on all States a general obligation to protect and preserve the marine environment in all maritime zones[170] and requires them to take measures to prevent, reduce and control pollution of the

marine environment, including "those necessary to protect and preserve rare or fragile ecosystems, as well as the habitat of depleted, threatened or endangered species and other forms of marine life".[171] States are also required to avoid the use of technologies, or the intentional or accidental introduction of alien species to a particular part of the environment, which may cause harmful changes thereto.[172]

256. *Convention on Biological Diversity*. The Convention on Biological Diversity also provides relevant rules for the conservation and sustainable use of the biodiversity of the seabed beyond national jurisdiction. The objectives of the Convention are the conservation of biological diversity, the sustainable use of its components and the fair and equitable sharing of the benefits arising out of the utilization of genetic resources. The Convention makes two important distinctions with respect to its jurisdictional application: on the one hand, between "components of biological diversity" and "activities and processes", and on the other, between areas within and those beyond the limits of national jurisdiction. In areas within national jurisdiction, the provisions of the Convention on Biological Diversity apply to components of biological diversity and to processes and activities that may have adverse impacts on biological diversity. In areas beyond the limits of national jurisdiction, the provisions of the Convention apply only to activities and processes carried out under a Contracting Party's jurisdiction or control which may have an adverse impact on biological diversity. Because they have no sovereignty or jurisdiction over the resources located in areas beyond the limits of national jurisdiction, Contracting Parties have no direct obligation with regard to the conservation and sustainable use of specific components of biological diversity in those areas. Consequently, the Convention underlines the need for cooperation among Contracting Parties "in respect of areas beyond national jurisdiction ... for the conservation and sustainable use of biological diversity".

257. The Convention defines "sustainable use" as "the use of components of biological diversity in a way and at a rate that does not lead to the long-term decline of biological diversity, thereby maintaining its potential to meet the needs and aspirations of present and future generations". Two elements of the definition provided under the Convention merit consideration: (a) the way in which the resources are utilized; and (b) the rate at which they are utilized. These two elements are interdependent, the rate at which the resource is being utilized largely depending on the use to which it is put.

258. The Convention on Biological Diversity requires Contracting Parties to "adopt measures relating to the use of biological resources to avoid or minimize adverse impacts on biological diversity".[173] Similarly, it requires them "to provide the conditions needed for compatibility between present uses and the conservation of biological diversity and the sustainable use of its components".[174] Parties must encourage cooperation between governmental authorities and the private sector in developing methods for the sustainable use of biological resources. Bioprospecting is often only possible as a result of joint ventures/consortia between government, industry and academia. Parties could utilize such cooperative arrangements with the private sector to ensure sustainable use of such resources.

259. The third objective of the Convention on Biological Diversity is the fair and equitable sharing of the benefits arising from the utilization of genetic resources.[175] One of the goals of benefit-sharing, beyond equity considerations and the reward of intellectual and financial contributions, is the creation of incentives for conserving

and sustainably using biological diversity. Benefit-sharing is particularly relevant to deep seabed genetic resources, which are not easily accessible to all States due to scientific and technological constraints but have great potential scientific and economic value. As legitimate as the protection of private data and proprietary interests through intellectual property rights may be, a balance needs to be struck between private benefits and benefits to humankind as a whole through the advancement of scientific knowledge.

4. Bioprospecting

260. It is becoming increasingly common for marine scientific research activities, especially those related to biological and geological sampling, to have links to onshore commercial activities. As a new use of the ocean, the intensification of research into commercially useful genetic resources and biochemical processes is raising significant legal and institutional issues, including from industry.[176]

261. There is an important distinction to be made between "pure" academic marine scientific research and research carried out for commercial purposes, usually called "bioprospecting". Marine scientific research activities are characterized by transparency and openness, the obligation to disseminate information and data obtained therefrom, as well as the subsequent publication of results of the research.[177] Marine scientific research must therefore be distinguished from other investigative marine activities with a commercial component, such as prospecting, exploration or fish stock assessment, which may involve confidentiality or proprietary rights. While academic marine scientific research targeting the biodiversity in the Area falls within the marine scientific research regime under UNCLOS, there are no provisions in UNCLOS specifically addressing commercially oriented activities, such as bioprospecting. In fact it should be noted that "survey activities", "prospecting" and "exploration" are not included in Part XIII dealing with the conduct of marine scientific research, while prospecting and exploration are covered in Part XI, which deals with resources to be commercially exploited. This omission indicates that these activities do not fall under the regime of Part XIII.

262. Because of its exploitative purpose and profit-making goals, bioprospecting may be compared to prospecting for mineral resources. Bioprospecting has been described as "the exploration of biodiversity for commercially valuable genetic and biochemical resources" and as "the process of gathering information from the biosphere on the molecular composition of genetic resources for the development of new commercial products".[178] "Prospecting" is defined in the International Seabed Authority Regulations on Prospecting and Exploration for Polymetallic Nodules.[179] Regulation 1 (3) (e) defines prospecting as the search for deposits of polymetallic nodules in the international seabed area, including estimation of the composition, sizes and distribution of polymetallic nodule deposits and their economic values, without any exclusive rights. Although the definition applies specifically to mineral resources, in particular polymetallic nodules, a number of principles implied in the definition can be applicable in the case of marine genetic resources. Thus, it is understood that "prospecting" does not constitute marine scientific research, but is an investigative activity undertaken for the discovery and estimation of the economic value of a resource, prior to its future commercial exploitation.

5. Work of the International Seabed Authority

263. With particular reference to the Area, UNCLOS requires the Authority to take the necessary measures in respect of activities in the Area to provide effective protection for the marine environment from activities that may have harmful effects, including interference with the ecological balance of the marine environment. Such measures are to be aimed at protecting and conserving the natural resources of the Area, as well as at preventing damage to the flora and fauna of the marine environment. In response to that requirement, the Authority has developed the Regulations on Prospecting and Exploration for Polymetallic Nodules and is currently drawing up regulations for prospecting and exploration of polymetallic sulphides and cobalt-rich ferromanganese crusts.

264. Because the biological resources of the deep seabed are symbiotically intermingled with the mineral resources, and in some cases feed upon them, the issue of the conservation and management of the biological resources of the deep seabed is inevitably related to the regulation of deep seabed mining. In areas beyond the limits of national jurisdiction, this regulation is carried out by the International Seabed Authority. In order to evaluate the threat of mining to deep sea biodiversity, further research is needed into species residing in areas likely to be disturbed by mining operations and into the typical geographical range and rates of gene flow of such species. The report of the Secretary-General of the International Seabed Authority to the ninth session of the Assembly of the Authority in August 2003, outlined the Authority's collaborative research project through the University of Hawaii to study the biodiversity, species range and gene flow in the Clarion-Clipperton Zone in the abyssal Pacific nodule province with a view to predicting and managing the impacts of deep seabed mining.[180]

265. At that session the Legal and Technical Commission of the Authority held a preliminary discussion, in open session, on issues relating to the biodiversity of the Area. While the Commission emphasized the need to work within its mandate under the Convention and the Agreement relating to the implementation of Part XI, it recognized its need for further knowledge and understanding of the biodiversity of the seabed and ocean floor in order to enable it to draw up regulations for the protection and preservation of the marine environment. The Commission decided to organize a seminar on the subject of seabed and deep ocean biodiversity relevant to prospecting and exploration for mineral resources.[181] The seminar would involve participation by the members of the Commission and leading experts in the field and would afford an opportunity for closer cooperation between relevant organizations working in the field, including scientific institutions. The Commission also invited one of its members to coordinate at its next session the preparation of a paper on the legal issues associated with biodiversity in the Area.[182] The Division for Ocean Affairs and the Law of the Sea welcomes the cooperation of the Authority and other relevant international organizations in reviewing issues relating to the conservation and sustainable use of the biological resources of the deep seabed beyond the limits of national jurisdiction, with a view to making appropriate recommendations to the General Assembly in due course.

6. The challenge of conservation and management

266. The parts of the seabed beyond the limits of national jurisdiction with biological resources under threat and requiring conservation and management share

some common characteristics, but also differ in some important respects. Seamounts and deepwater corals are both mainly threatened by fishing activities and must therefore be protected through appropriate management and control of destructive fishing practices, in particular bottom trawling. The biological resources of seamounts are also potentially threatened by mining for ferromanganese crusts, while hydrothermal vents may be damaged by mining for polymetallic sulphides, bacteria in gas hydrates are harmed by extractive activities and any organisms found on the ocean floor or on polymetallic nodules may be damaged by mining for those nodules. In these cases, the mining and the protection of biodiversity from mining activities fall within the mandate of the International Seabed Authority. Marine scientific research everywhere on the seabed, but in particular in relation to hydrothermal vents, pockmarks and seeps, may also have harmful effects. Although article 240 of UNCLOS as a general principle requires marine scientific research to be conducted in compliance with regulations for the protection and preservation of the marine environment, no specific legally binding regulations have been adopted for the protection of biodiversity on the seabed from marine scientific research. With regard to bioprospecting, as pointed out above, while some general principles in UNCLOS and the Convention on Biological Diversity are applicable, there is no specific legal regime governing commercially oriented research on the biological resources of the deep seabed beyond the limits of national jurisdiction. This legal lacuna should be filled in order to conserve these biological resources and provide for their sustainable uses. Finally, recent research has shown that climate change may pose a significant threat to some forms of biodiversity.[183] Coral reefs are already suffering from this threat, but the issue of climate change lies beyond the scope of UNCLOS.

B. Offshore energy generation

1. Wind farms

267. Wind energy represents a major form of sustainable energy generation. Winds push the blades of wind turbines and the resultant kinetic energy is converted into mechanical power. A generator then converts the mechanical power into electricity that can be fed into the power grid for consumption. Wind power plants, containing a number of turbines, are called "wind farms" or "wind parks". Wind energy is the fastest-growing renewable energy source, a trend that is expected to continue in the future, provided a number of risks are overcome.[184] Offshore wind energy in particular has benefited from the reduction of both investment and energy costs for offshore wind in the last decade.[185] Under the European Commission Renewable Energy Strategy, wind energy, with an ambitious target of 40 giga watts (GW) by 2010, is expected to provide the second most important contribution from renewable energy sources in that region. Similarly, EU directive 2001/77/EC calls for the Community to produce 22 per cent of its electricity from renewable energy sources. Wind power is expected to play an important role in reaching that target, with the offshore sector contributing around 5GW. As regards global energy demand, one study affirms that by 2020 wind power can supply 12 per cent of the world's electricity needs.[186]

268. Some international instruments already contain a reference to offshore wind power. The Bergen Declaration, signed in March 2002 by the Environment Ministers of nine European countries at the Fifth International Conference on the

Protection of the North Sea in Bergen, Norway, welcomed the development of offshore wind energy, recognizing that it has the potential to make a significant contribution to tackle the problems of climate change. The Declaration also encourages the competent authorities to develop indicative guidance on areas suitable for offshore wind energy developments, while agreeing that offshore wind energy parks should be developed taking account of environmental impact data and monitoring information and noting the opportunity to apply the precautionary principle to those developments from the outset.[187] Moreover, OSPAR, at its second Ministerial Meeting in Bremen, Germany, on 25 June 2003 (see para. 202 above), invited the cooperation of the European Union in the development of criteria to assist authorities when authorizing offshore wind installations and to as well as of a description of best available techniques for the construction, operation and removal of offshore wind energy parks with a view to facilitating their development and protecting the marine environment.[188] Consequently, the OSPAR Commission in 2003 adopted agreements 2003-16, entitled "Guidance on a Common Approach for Dealing with Applications for the Construction and Operation of Offshore Wind-Farms", and 2003-06, entitled "OSPAR Reporting Format and Database on Offshore Wind-farms". The former is divided into sections dealing with (a) aspects of licensing procedures for offshore wind farms, (b) main requirements to be fulfilled by an offshore wind farm, (c) minimum criteria to be considered in environmental impact assessments and (d) guidance on determining the suitability of an area for the location of a wind farm.

269. Offshore wind is considered to be an attractive energy source for a variety of reasons, among them very high wind speed associated with low sea-surface roughness,[189] minimal impact on landscape and increased local tourism. As regards environmental effects, wind-electricity generation consumes no feedstock or fuel, emits no greenhouse gases[190] and creates no waste products. In addition, the submerged portions of wind turbines may become a haven for marine life. However, marine wind farms could cause problems for navigation, as they might generate false radar echoes and disturb telecommunications. Concerns have also been expressed about the environmental risks posed by wind energy parks. These may include destruction or disturbance of food sources and habitats, increased collision risk for birds in flight, generation of electric and magnetic fields of connecting power cables and emission of noise and vibration into the water and seabed.[191] In this regard, the Seventh Conference of the Parties to the Convention on Migratory Species (Bonn, Germany, September 2002) invited relevant intergovernmental organizations as well as the European Community and the private sector to cooperate with the Convention secretariat in efforts to minimize possible negative impacts of offshore wind turbines on migratory species.

270. Floating platforms would enable the generation of wind power in non-shallow water, thus making it possible for wind farms to be set up farther from the coast or in countries lacking shallow waters. Platforms containing one or multiple turbines would be kept in site by mooring them to the seafloor. Since the early 1990s, a number of studies exploring the possibilities for floating wind turbines systems have been conducted in different regions. The studies have shown that floating wind turbines, although technically viable, are not yet feasible, mainly due to the high costs incurred by their floaters and mooring systems.[192]

2. Wave power

271. Wave energy conversion takes advantage of ocean waves, the result of the interaction of winds with the ocean surface. Once a wave has been created, it can travel for thousands of miles with little energy loss until its energy dissipates on the shores. On a large water surface, such as the Atlantic or the Pacific Ocean, the ocean waves are a more consistent energy source than the wind or the sun. Also, modern wind-wave models allow the presence of waves to be accurately predicted 48 hours in advance. Since water is a much denser medium than, for example, wind, waves make for a highly concentrated source of mechanical energy from which to generate low-cost electrical energy. Moreover, most of the wave energy is generally available in the winter season, thus presenting a seasonal advantage over the other sources.[193]

272. Waves form a potentially large global energy resource, estimated at more than 2 terawatts.[194] Several regions have high incident wave power levels that are particularly well suited for exploiting this renewable energy source.[195] With 37 per cent of the world's population living within 60 miles of a coastline and wave energy being available in many coastal locations at sufficient densities to allow its commercial exploitation, installations designed to generate electricity from ocean waves can be expected to have significant potential for success. A vast array of concepts for wave energy conversion are currently under investigation in various parts of the world, which suggests that the best technology may not yet have been identified. Since only a few schemes have been built to date, there is as yet no assessment of the environmental impact of wave energy conversion.

273. However, noise, loss of working fluids, disturbance of fish and sea mammals, and potential pollution associated with ship collisions have been identified as probable environmental impacts resulting from wave power generation systems. The most pronounced effect is likely to be on the wave regime. A decrease in incident wave energy could influence the nature of the shore and the shallow sub-tidal area and the communities of plants and animals they support.[196] High construction costs and possible reduced survivability of the devices may also hinder the development of the industry. On the other hand, the advantages of wave energy are manifold: it is generally considered to provide a clean source of renewable energy not involving large carbon monoxide emissions; it may stimulate declining industries, such as shipbuilding; and it is less visually obtrusive than wind turbines.

274. In Japan, India and China national programmes have funded the construction of wave energy power prototypes, with rated power between 20 and 180 kW. In Europe, the European Commission has provided an important contribution to wave energy development by funding the design and construction in islands with local grids of two wave energy pilot plants (Azores, 400 kW, and Islay, 500 kW).

3. Tidal power

275. Tidal energy is based upon the power of changing tides. Tidal changes at sea level can be used to generate electricity, either by building semi-permeable barrages across estuaries with a high tidal range or by harnessing offshore tidal streams. Offshore tidal streams can be harnessed using underwater devices similar to wind turbines. The first and largest tidal plant was built in the 1960s at La Rance in France and can generate 240MW of power. While approximately 3,000GW of tidal energy is estimated to be available worldwide, less than 3 per cent is located in

areas suitable for power generation. The total world potential for ocean tidal power has been estimated at 64,000 MW.

276. Extraction of energy from the tides is considered to be practical only at those sites where the energy is concentrated in the form of large tides[197] and the geography provides suitable sites for tidal plant construction. Such sites are not common, but a considerable number have been identified in the United Kingdom, France, eastern Canada and on the Pacific coast of the Russian Federation, Korea, China, Mexico and Chile. Other sites have been identified along the Patagonian coast of Argentina, western Australia and western India.[198]

277. The few studies that have been undertaken to date to identify the environmental impacts of a tidal power scheme have determined that each site is unique and that the impacts depend greatly upon local geography. Changing the tidal flow in a coastal region, in particular by damming a bay or estuary, could result in a wide variety of impacts on aquatic life, most of which are poorly understood. Damage such as reduced flushing, winter icing and erosion can change the vegetation of the area and disrupt the ecological balance. The alteration of tidal currents could also affect the habitat of seabirds and fish and create coastal erosion or deposition. In the case of submerged turbines, visual intrusion would be less significant, since only piles would protrude above water. Fouling of turbines and generators is yet another problem to be addressed, as well as the effects of noise and drilling to install the turbines. As to the advantages of this type of energy generation, besides those common to all renewable energy sources, tidal energy could provide energy 24 hours a day and 365 days a year in a highly efficient manner.

4. Nuclear power stations

278. For more than a decade, the Russian Federation has been developing plans for the construction of floating nuclear power plants. The floating plants are to be placed on large barges (with dimensions of 140m by 30m by 30m, with a water displacement of 20,000 MT) that would be towed to their destination and anchored offshore. It is estimated that each plant's two turbo generators, powered by two nuclear reactors, would produce 60 megawatts of electricity. Russian experts maintain that the plants could also be used to provide electricity and heat to regions with underdeveloped infrastructure, to the sites of large construction projects, to areas struck by natural disasters or other emergencies, as well as for desalination.[199] Spent nuclear fuel would be stored on board.

279. The projected costs of these plants vary widely, from $90 million to more than $300 million. However, the main concern about them lies in their export potential, given that they will be powered by highly enriched uranium, which could be rapidly converted to weapons-grade material. Russian officials maintain that under the Treaty on the Non-Proliferation of Nuclear Weapons, the Russian Federation is allowed to export such plants as long as it exports the plants and their fuel to countries that are signatories to the Non-Proliferation Treaty and accept the IAEA full-scope safeguards (monitoring activities that apply to all fissile material in a non-nuclear weapon State to ensure that those fissile materials are not used for military purposes).

280. Environmentalists have pointed to the limitations on the implementation of many of the safety features of land-based nuclear power plants (NPPs) on a floating

NPP (e.g. a floating NPP cannot be protectively located underground or behind high-impact concrete walls, as is the case with land-based NPPs). Environmentalists also fear that if additional radioactive waste is produced and there is no room for it on board the vessel, the extra waste would be dumped into the sea.

5. Ocean thermal energy conversion and desalination

281. Oceans absorb an enormous amount of thermal energy each day from the sun. Ocean thermal energy conversion (OTEC) systems convert this thermal energy into electricity, often while producing desalinated water. Many locations across the world's oceans are suitable for the installation of ocean thermal energy conversion systems if the temperature differential between surface waters and water from approximately 1,000 feet deep is sufficiently large. Small island nations in the Pacific Ocean and the Caribbean would be prime areas for OTEC plants: locations where power generation is primarily based on diesel fuel and freshwater supplies for agriculture or drinking are limited. Three types of OTEC systems can be used to generate electricity: (a) "closed-cycle plants" circulate a working fluid in a closed system, heating it with warm seawater, flashing it to vapour, routeing the vapour through a turbine and then condensing it with cold seawater; (b) "open-cycle plants" flash the warm seawater to steam and route the steam through a turbine (these plants also efficiently produce desalinated water); and (c) "hybrid plants" flash the warm seawater to steam and use that steam to vaporize a working fluid in a closed system. These plants also efficiently produce desalinated water. Not only do ocean thermal energy conversion systems produce electricity and desalinated water through the aforementioned processes, but the nutrient-rich deep water can also be utilized for mariculture. All OTEC systems require expensive, large-diameter intake pipe, submerged a mile or more into the ocean's depths, to bring the cold water to the surface. Currently, these systems have not proved to be cost-effective as compared to the conventional power technologies (generally oil-related) for energy production.

282. It is estimated that one fifth of the world's population does not have access to safe drinking water, and that this proportion will increase due to population growth relative to water resources.[200] The worst-affected areas are the arid and semiarid regions of Asia and North Africa.[201] Where freshwater is not easily available, desalination of seawater is an alternative source. According to one study, most desalination plants use fossil fuels, and this contributes to increased levels of greenhouse gases. Total world capacity is approaching 30 million m^3/day of potable water, in some 12,500 plants. Half of these are in the Middle East. The largest produces 454,000 m^3/day.[202] The major technologies in use are the multi-stage flash (MSF) distillation process using steam, and reverse osmosis (RO) driven by electric pumps. A minority of plants use multi-effect distillation (MED) or vapour compression (VC). MSF-RO hybrid plants exploit the best features of each technology for different quality products (MSF gives purer water than RO).

283. Desalination is energy-intensive. Reverse osmosis requires about 6 kWh of electricity per cubic metre of water, while MSF and MED require heat at 70°-130° C and 25-200 kWh/m^3. A variety of low-temperature heat sources may be used, including solar energy. The choice of process generally depends on the relative economic values of freshwater and particular fuels. Recently, the use of nuclear power for desalination purposes has gained increased attention. The BN-350 fast reactor at Aktau, Kazakhstan, launched by the former Soviet Union has successfully

produced up to 135 MWe of electricity and 80,000 m^3/day of potable water over some 27 years, about 60 per cent of its power being used for heat and desalination. The plant was designed for a capacity of 1,000 MWt but never operated at more than 750 MWt. However, it established the feasibility and reliability of such cogeneration plants. In fact, oil/gas boilers were used in conjunction with it, and total desalination capacity through 10 MED units was 120,000 m^3/day.[203]

284. In Japan, some 10 desalination facilities linked to pressurized water reactors operating for electricity production have yielded 1,000-3,000 m^3/day of potable water each. India has been engaged in desalination research since the 1970s and is about to set up a demonstration plant coupled to twin 170MW nuclear power reactors at the Madras Atomic Station, in south-east India. China is examining the feasibility of a nuclear seawater desalination plant in the Yantai area to produce 160,000 m^3/day by a MED process, using a 200MW reactor. The Russian Federation has initiated a nuclear desalination project using dual barge-mounted KLT-40 marine reactors (each 150MW) and Canadian RO technology to produce potable water.

285. Pakistan is continuing efforts to set up a demonstration desalination plant coupled to its Karachi reactor and producing 4,500 m^3/day. Tunisia is examining the feasibility of a cogeneration (electricity-desalination) plant in the south-east of the country, to treat slightly saline groundwater. Morocco has completed a pre-project study with China, at Tan-Tan on the Atlantic coast, using a 10MW heating reactor which produces 8,000 m^3/day of potable water by distillation (MED). Egypt has launched a feasibility study for a cogeneration plant to produce electricity and potable water at El-Dabba, on the Mediterranean coast.[204] The Republic of Korea has developed a small nuclear reactor design for cogeneration of electricity and potable water at 40,000 m^3/day. The 330MW SMART reactor has a long design life and needs refuelling only every three years. The feasibility of building a cogeneration unit employing MSF desalination technology for Madura island in Indonesia is being studied. Under another concept the SMART reactor is coupled to four MED units, each with a thermal-vapour compressor (MED-TVC) and producing a total of 40,000 m^3/day. Argentina has also developed a small nuclear reactor design for cogeneration or desalination alone, the 100MW CAREM (an integral pressurized water reactor). All these projects have requested technical assistance from IAEA under its technical cooperation project on nuclear power and desalination.[205]

C. New minerals and gas hydrates

286. *Polymetallic sulphides* mostly occur in the hydrothermal vents in mid-oceanic ridges. At water depths of about 3,500-4,000 metres, when hydrothermal fluids mix with cold surrounding seawaters, metal sulphides in the water are precipitated onto the chimneys and nearby seabed. These sulphides accumulate at and just below the seafloor, where they form massive deposits. High concentrations of the base metals copper, zinc and lead and the precious metals gold and silver have attracted the interest of the mining industry. While only about 5 per cent of the 60,000 kilometres of oceanic ridges worldwide has been surveyed in any detail, the current indications are that most deposits are found in the East Pacific Rise and North-East Pacific Rise, and some at the Mid-Atlantic Ridge. One site has also been located at the Central Indian Ridge.

287. The paucity of information on sulphide deposits at the Mid-Atlantic Ridge and the Central Indian Ridge is explained by the fact that exploration in these areas has been limited. Today, nearly 100 sites of hydrothermal mineralization are known, including about 25 sites with high-temperature black-smoker venting. Polymetallic sulphide deposits in different volcanic and tectonic settings reveal different proportions of metal content. Tonnage estimates on mid-oceanic ridges vary from 1 million to 100 million tonnes. However, it is difficult to gauge the continuity of sulphide outcrops and little is known about the thickness of the deposits.

288. *Cobalt-rich ferromanganese crusts* are formed through precipitation of cold ambient seawater onto the rock surface, possibly with the aid of bacterial activity. Crusts do not form in areas where sediment covers the rock surface. They are usually found at water depths of about 400-4,000 metres. The thickest crust occurs on outer-rim terraces and on broad saddles on the summits of seamounts, at depths of 800-2,500 metres. Current knowledge indicates that crusts generally grow at the rate of 1 to 6 millimetres per million years. Consequently, it can take 60 million years to form a thick crust. Crusts form pavements of up to 25 centimetres and can span many square kilometres in area.

289. According to one estimate, about 6.35 million square kilometres, or 1.7 per cent of the ocean floor, is covered by cobalt-rich crusts, estimated to contain a billion tons of cobalt. In addition to cobalt, crusts are considered to be an important potential source of titanium, cerium, nickel, zirconium, platinum, manganese, phosphorus, thallium, tellurium, tungsten, bismuth and molybdenum.

290. Potential miners are likely to look for seamounts shallower than 1,000-1,500 metres, older than 20 million years and not capped by large atolls or reefs, located in areas of strong and persistent bottom currents, with a shallow and well-developed low-oxygen zone in the overlying water and isolated from an abundant influx of riverine and wind-blown debris. They will certainly look for a flat bottom located on summit terraces, saddles or passes, with stable slopes and no local volcanism. Their preference will be for average cobalt content of at least 0.8 per cent and average crust thickness of no less than 4 centimetres. Based on current knowledge, the potential areas for crust mining are the central equatorial Pacific region, particularly in the exclusive economic zones around Johnston Island and Hawaii, the Marshall Islands, the Federated States of Micronesia and international waters of the mid-Pacific.

291. *Methane or gas hydrates* are a naturally occurring "ice-like" combination of natural gas and water that have the potential to provide an immense resource of natural gas from the world's oceans and polar regions. It is estimated that the volume of energy trapped in methane hydrates exceeds the volume of all known conventional gas resources. According to some estimates the global amount of carbon stored in methane hydrates is estimated at 10,000 gigatonnes, which is nearly double the amount of carbon stored in all known fossil fuel deposits.

292. The interest in methane hydrates is worldwide. Numerous programmes of investigation have been undertaken in, e.g., Japan, India, Canada, the United States and Germany. One notable example is the Mallik 2002 Gas Hydrate Research Well Programme drilling on the permafrost of the Mackenzie Delta in the North-west Territories of Canada. This consortium includes interests from Canada, Japan, Germany, the United States, India and the International Continental Scientific Drilling Program. Three wells have been drilled to a depth of 1,150m and methane

hydrate deposits have been found at a depth exceeding 1,000m in the total gross thickness of a 216m section.[290] Another research project is being undertaken off Hokkaido Island by the Japan National Oil Corporation. Commercial production is currently targeted for 2010. It is estimated that recovery of only one tenth of the estimated reserve would provide Japan with methane for 100 years.[291]

293. However, there are difficulties with extracting this resource. Methane hydrates tend to underlie permafrost or continental margin sediments. When the sediments are disturbed, the resultant unexpected releases of the gas could cause undersea avalanches or destabilize the supporting foundations for platforms and production wells or the pipelines located thereon. Methods of harvesting methane hydrates will have to be developed. The amount of methane that is trapped as hydrates is enormous, and the consequences of its release for the global climate could be of a high magnitude.

294. These methane gas deposits are in a constant state of flux, absorbing and releasing methane in response to ongoing natural changes in the environment. The implications of this vast, dynamic and previously unnoticed methane reservoir for the global carbon cycle, long-term climate, seafloor stability and future energy policy should be carefully investigated.[292]

X. International cooperation and coordination

A. United Nations Open-ended Informal Consultative Process on Oceans and the Law of the Sea

295. The fifth meeting of the Consultative Process will be held at United Nations Headquarters in New York from 7 to 11 June 2004, with discussions focused around "New sustainable uses of the oceans, including the conservation and management of the biological diversity of the seabed in areas beyond national jurisdiction", as well as issues discussed at previous meetings, in accordance with paragraph 68 of General Assembly resolution 58/240 of 23 December 2003. The President of the fifty-ninth session of the General Assembly reappointed H.E. Mr. Felipe H. Paullo (Uruguay) and Mr. Philip Burgess (Australia) as co-chairpersons of the fifth meeting.

B. Mechanism for inter-agency cooperation

296. In paragraphs 69 to 71 of resolution 58/240, the General Assembly reiterated its request to the Secretary-General, previously set forth in paragraphs 63 to 67 of General Assembly resolution 57/141, to establish an effective, transparent and regular inter-agency coordination mechanism on oceans and coastal areas within the United Nations system. On 31 October 2003, the United Nations System Chief Executives Board for Coordination (CEB) endorsed the conclusion of the High Level Committee on Programmes (HLCP) to establish an ocean and coastal areas network (OCAN), building on the former Subcommittee on Oceans and Coastal Areas (SOCA) of the Administrative Committee on Coordination.

297. OCAN was requested to urgently set up a task group to draw up its terms of reference and work programme for submission to HLCP. The former chair of SOCA,

Patricio Bernal, Executive Secretary, IOC/UNESCO, was asked by the Director of the CEB secretariat to take the lead in initiating the process of defining the terms of reference for OCAN. He has written to the members of the former SOCA soliciting their views on the definition of the terms of reference for OCAN as well as on its prospective membership.[209]

298. The Plan of Implementation of the World Summit on Sustainable Development and the discussions on inter-agency cooperation and coordination at the third and fourth meetings of the Consultative Process are to be the basis for a programmatic framework for the development of the terms of reference of OCAN and its work programme. The draft elements of the terms of reference could be summarized as follows: (a) strengthening coordination and cooperation of the United Nations activities related to oceans and coastal areas; (b) reviewing the relevant programmes and activities of the United Nations system, undertaken as part of their contribution to the implementation of UNCLOS, Agenda 21, and the Johannesburg Plan of Implementation; (c) identifying emerging issues, defining joint actions and establishing specific task teams to deal with these, as appropriate; (d) promoting the integrated management of the oceans at the international level; (e) facilitating, as appropriate, the inputs into the annual report of the Secretary-General on oceans and the law of the sea; and (f) promoting the coherence of the United Nations system activities on oceans and coastal areas with the mandates of the General Assembly and the priorities contained in the Millennium Development Goals, the Johannesburg Plan of Implementation and of governing bodies of all members of the network.

299. It is expected that the membership of OCAN will include relevant programmes, entities and specialized agencies of the United Nations system as well as convention secretariats and the International Seabed Authority. In addition, the participation of financial institutions, such as the World Bank, will be encouraged, and non-United Nations bodies could be invited to join task forces on specific issues.

300. Despite the lack of an overarching mechanism, inter-agency cooperation has continued on its usual course, with frequent requests for comments on documents, representations at meetings and participation in task forces such as the Consultative Group on Flag State Implementation, the inter-agency group on persons rescued at sea and the Global Marine Environment Assessment. The report of the Consultative Group on Flag State Implementation is being issued as a separate document (A/59/63).

C. Regular process for the global reporting and assessment of the state of the marine environment, including socio-economic aspects (GMA)

301. Background information on the GMA is contained in the addendum to the report of the Secretary-General dated 29 August 2003 on oceans and the law of the sea to the General Assembly at its fifty-eighth session.[210] Subsequently, the Division for Ocean Affairs and the Law of the Sea convened an inter-agency meeting on 8 and 9 September 2003 at IOC/UNESCO headquarters in Paris to discuss modalities for and eventual contributions to the regular process for global reporting and assessment of the state of the marine environment by organizations, specialized

agencies and relevant regional bodies, together with regional seas programmes and action plans. The discussions at that meeting are reflected in the report of the Secretary-General entitled "A regular process for the global reporting and assessment of the state of the marine environment: proposals on modalities".[211]

302. In paragraphs 64 and 65 of resolution 58/240, the General Assembly describes the subsequent steps required in order to establish the GMA. The Division has engaged the services of two consultants to prepare a draft document that will set out details on the scope, general framework and outline of the regular process, peer review, secretariat, capacity-building and funding.

303. The draft document will be reviewed and refined by a group of experts and subsequently transmitted to States, relevant intergovernmental organizations, non-governmental organizations, scientific associations, funding mechanisms and other parties for written comments, with an indication of specific issues to be addressed in the first assessment. A meeting of the group of experts to be held at United Nations Headquarters from 23 to 26 March 2004 will consist of 24 participants representing States from all regional groups, as well as intergovernmental and non-governmental organizations, including both scientists and policy makers. Thereafter, an international workshop with representatives from all interested parties will be convened, in conjunction with the fifth meeting of the Consultative Process, to further consider and review the draft GMA document. Lastly, an intergovernmental meeting, hosted by the Government of Iceland, will be convened in Reykjavik in October 2004 to finalize and adopt the draft document and to formally establish the GMA process.

XI. Conclusions

304. **Some of the foregoing chapters have reviewed developments since the entry into force of the United Nations Convention on the Law of the Sea in 1994. Others have summarized events in ocean affairs since the report of the Secretary-General to the General Assembly at its fifty-eighth session. Still others, in view of the areas of focus for the fifth meeting of the open-ended informal consultative process on oceans and the law of the sea, glance towards the future, at new sustainable uses of the oceans, at unresolved issues and at international ocean governance.**

305. **From a more modest perspective, as we approach the tenth anniversary of the entry into force of the Convention, it might be appropriate for States parties to examine the way they are implementing its provisions and review the mechanisms in place to address oceans issues. International organizations might also consider how they can contribute to better implementation of the Convention. It might therefore be recommended that:**

(a) **States parties review their national legislation and ensure that it is in conformity with the Convention;**

(b) **States parties review any declarations made at the time of signature or ratification or accession, and ensure that they are in accordance with the Convention;**

(c) **States parties submit the charts and/or coordinates required under the Convention;**

(d) **States deposit their oceans-related legislation with the Division for Ocean Affairs and the Law of the Sea, Office of Legal Affairs, so that it may be published in the Law of the Sea Bulletin and on the web site;**

(e) **States endeavour to establish the limits of their maritime zones and to settle any maritime boundaries with their neighbours;**

(f) **States consider establishing national marine policies integrating all aspects of ocean affairs;**

(g) **States, pursuant to those policies, endeavour to better coordinate the work of their various departments dealing with ocean affairs in order to manage the areas and activities under their national jurisdiction in an integrated manner;**

(h) **States be guided by those same consistent, integrated oceans policies in their cooperation with other States, both directly and in the context of international organizations;**

(i) **International organizations collect national legislation in their areas of competence and publish it on their web sites.**

306. **It is understood, however, that some States might not have the technical, administrative or financial capacity to implement the Convention. That is why the capacity-building by the United Nations and other international organizations is essential, both to assist individual States and to ensure the development of an integrated global regime for the oceans.**

307. **Thus, the challenge in this tenth anniversary year is for States and organizations to fully implement the provisions of the Convention, in their legislation, in their administrations, in their daily practice and in cooperation with other States. Ultimately, such an approach will culminate in harmonized inter-agency cooperation as well. As always, the Division for Ocean Affairs and the Law of the Sea stands ready to assist all Member States in this endeavour.**

Notes

[1] Afghanistan, Belarus, Bhutan, Burkina Faso, Burundi, Cambodia, Central African Republic, Chad, Colombia, Congo, Democratic People's Republic of Korea, Denmark, Dominican Republic, El Salvador, Ethiopia, Iran (Islamic Republic of), Lesotho, Liberia, Libyan Arab Jamahiriya, Liechtenstein, Malawi, Morocco, Niger, Niue, Rwanda, Swaziland, Switzerland, Thailand and United Arab Emirates.

[2] Austria, Belgium, Denmark, Germany, Greece, Finland, France, Ireland, Italy, Luxembourg, Netherlands, Portugal, Spain, Sweden and United Kingdom of Great Britain and Northern Ireland.

[3] Article 47 (1) of the 1995 United Nations Fish Stocks Agreement stipulates that in cases where an international organization referred to in annex IX, article 1, to the Convention does not have competence over all the matters governed by the Agreement, annex IX to the Convention (with the exception of article 2, first sentence, and article 3 (1)) shall apply mutatis mutandis to participation by such international organization in the Agreement.

[4] From among the States parties, only Benin and Somalia appear in available maritime claims statistics as claiming the territorial sea of 200 nautical miles and Togo as claiming a 30-nautical-mile territorial sea.

[5] www.un.org/Depts/los/LEGISLATIONANDTREATIES/status.htm.

[6] United Nations publication, Sales No. E.94.V.15.

[7] Declaring a natural resource that straddles maritime areas controlled by different States a unity for the purposes of its joint development.

[8] Sovereignty over the islands of Providencia, San Andrés and Santa Catalina and all the appurtenant islands and keys, and also over the Roncador, Serrana, Serranilla and Quitasueño keys (insofar as they are capable of appropriation).

[9] *Territorial and Maritime Dispute (Nicaragua v. Colombia)*, Application of the Republic of Nicaragua, 6 December 2001, para. 8.

[10] www.un.org/Depts/los/LEGISLATIONANDTREATIES/index.htm.

[11] A/58/388.

[12] A/CONF.202/3, annex I.

[13] General Assembly decision 58/547.

[14] Part XI, article 156, of the Convention. The Agreement relating to the Implementation of Part XI of the United Nations Convention on the Law of the Sea of 10 December 1982 was adopted by the General Assembly on 28 July 1994 (resolution 48/263). The Agreement provides that the provisions of the Agreement and Part XI of the Convention shall be interpreted and applied as a single instrument. In the event of any inconsistency between the Agreement and Part XI, the provisions of the Agreement shall prevail. See article 2 (1) of the Agreement.

[15] Article 157 (1) of the Convention.

[16] See LOS/PCN/L.115/Rev.1 and ISBA/3/A/4.

[17] General Assembly resolution 51/6.

[18] General Assembly resolution 52/27.

[19] In accordance with paragraph 14 of resolution II of the Final Act of the Third United Nations Conference on the Law of the Sea, governing preparatory investment in pioneer activities relating to polymetallic nodules, the resolution ceased to have effect upon the entry into force of the Convention.

[20] The resolution named four States as pioneer investors: France, India, Japan and the former Soviet Union. The other four were to be multinational consortia composed of companies from Belgium, Canada, the Federal Republic of Germany, Italy, Japan, the Netherlands, the United Kingdom of Great Britain and Northern Ireland and the United States of America, and possibly others from developing States. See resolution II, para. 1 (a) (i)-(iii).

[21] The seven final pioneer investors were: India on 17 August 1987; Institut Français de recherche pour l'exploitation de la mer/l'Association Française pour l'etude et la recherche des nodules (IFREMER/AFERNOD) (France), Deep Ocean Resources Development Company (Japan), and Yuzhmorgeologiya (Union of Soviet Socialist Republics) (now Russian Federation) all on 17 December 1987; China Ocean Mineral Resources Research and Development Association (China) on 5 March 1991; Interoceanmetal Joint Organization (Bulgaria, Cuba, Czech and Slovak Federal Republic (now the Czech Republic and Slovakia), Poland and Union of Soviet Socialist Republics (now Russian Federation)) on 21 August 1991; and Republic of Korea on 2 August 1994.

[22] ISBA/6/A/18.

[23] Ibid., annex, regulation 31 (3).

[24] ISBA/4/A/18, para. 14.

[25] ISBA/9/C/6, para. 7.

[26] The first workshop was held at Sanya, Hainan Island, China, in June 1998, on environmental guidelines on deep-seabed mining of polymetallic nodules. This was followed by a workshop on

proposed technologies for deep-seabed mining in Kingston, Jamaica, in August 1999. The third of the series related to mineral resources in the deep seabed other than polymetallic nodules, with focus on the status and prospects of polymetallic sulphides and cobalt-rich ferromanganese crusts, also in Kingston in June 2000. The theme of the fourth workshop (Kingston, June 2000) was standardization of environmental data and information. The fifth workshop (August 2002) represented an attempt to build upon the previous workshops by examining the prospects for international collaboration in marine environmental research to enhance understanding of the deep sea environment, including biodiversity.

[27] Information on the work of the Authority is available at its web site: www.isa.org.jm.

[28] See the Tribunal's web site at www.itlos.org.

[29] See International Tribunal for the Law of the Sea, ed. *Basic Texts 1998/Textes de base 1998* (The Hague, Martinus Nijhoff Publishers, 1999).

[30] For the list of judges elected, see A/51/645, para. 70. A current list of judges can be found on the Tribunal's web site at www.itlos.org.

[31] See SPLOS/48, SPLOS/73, SPLOS/91 and SPLOS/106. A third of the judges are elected every three years for a term of nine years.

[32] The 2004 budget adopted by the thirteenth Meeting of States Parties in 2003 amounted to a total of US$ 8,039,000.

[33] SPLOS/103, para. 68.

[34] Registry of the International Court of Justice, Appellate Body Secretariat of the World Trade Organization, International Hydrographic Bureau of the International Hydrographic Organization, Division for Ocean Affairs and the Law of the Sea of the United Nations, Legal Affairs Division of the World Trade Organization Secretariat, Secretariat of the International Maritime Organization, Intergovernmental Oceanographic Commission of UNESCO, Secretariat of the International Seabed Authority, European Court of Human Rights, and Inter-American Court of Human Rights.

[35] SPLOS/24, para. 27.

[36] Documents, orders and judgements for these cases can be found on the Tribunal's web site, www.itlos.org, and in the *Reports of Judgments, Advisory Opinions and Orders*, vols. 1-5, published by Martinus Nijhoff Publishers. Details of the judicial activities of the Tribunal can also be found in the Tribunal's Yearbooks.

[37] Final Act of the Third United Nations Conference on the Law of the Sea, annex II; see United Nations publication, Sales No. E.97.V.10.

[38] SPLOS/5, para. 20.

[39] For a list of the members of the Commission, and the election of the Chairman and other officers, see the Statement of the Chairman on the progress of work in the Commission, CLCS/1, paras. 2 and 7.

[40] CLCS/4, para. 11. Those issues concerned submissions in the case of a dispute and issues of confidentiality.

[41] See SPLOS/73, paras. 67-84.

[42] For a list of the members of the Commission, as well as its Chairman and other officers, see www.un.org/Depts/los/clcs_new/commission_2002elections.htm, and CLCS/34, paras. 2 and 11.

[43] See A/AC.259/L.3.

[44] See, e.g., General Assembly resolution 46/78, preamble and para. 16, and resolution 47/65, preamble and para. 16.

[45] See "Evaluation of capacity-building in UNCTAD's technical cooperation activities", TD/B/WP/155.

[46] "The DMFAS programme — annual report 2002", UNCTAD/GDS/DMFAS/2003/1, p. 4 (available online at http://magnet.undp.org/docs/cap/Main.htm).

[47] UNDP, Management Development and Governance Division, Bureau for Development Policy, Capacity Assessment and Development in a Systems and Strategic Management Context — Technical Advisory Paper No. 3, p. 5 (available online at http://magnet.undp.org/Docs/cap/Ch2.pdf).

[48] Ibid., p. 6, footnote 5.

[49] See, e.g., the call for legal assistance to States with regard to the implementation of the international conventions they are party to, contained in the Secretary-General's "Millennium Declaration": "We the peoples: the role of the United Nations in the twenty-first century", A/54/2000, paras. 326 and 327 (available online at www.un.org/millennium/sg/report/ch5.htm). This goal was further detailed in the report of the Secretary-General entitled "Road Map towards the implementation of the United Nations Millennium Declaration", A/56/326, e.g., para. 20.

[50] See the reports on the work of the United Nations Open-ended Informal Consultative Process — A/55/274, A/56/121, A/57/80, A/58/95 — and the resolutions of the General Assembly that have followed: resolutions 55/7, 56/12, 57/141, and 58/240.

[51] General Assembly resolution 56/12, para. 8.

[52] See General Assembly resolution 36/108.

[53] The participating institutions/universities are: Center for Oceans Law and Policy, University of Virginia, United States; Dalhousie Law School, Halifax, Canada; Faculty of Law, University of Oxford, United Kingdom; Faculty of Law, University of Southampton, United Kingdom; Graduate Institute of International Studies, Geneva; Institute of International Studies, University of Chile; International Boundaries Research Unit, University of Durham, United Kingdom; Marine Policy Center, Woods Hole Oceanographic Institution, Massachusetts, United States; Max Planck Institute for Comparative Public Law and International Law, Heidelberg, Germany; Netherlands Institute for the Law of the Sea, University of Utrecht; Research Centre for International Law, University of Cambridge, United Kingdom; Rhodes Academy of Oceans Law and Policy, Greece; School of Law, University of Georgia, United States; School of Law, University of Miami, United States; School of Law, University of Washington, United States; William S. Richardson School of Law, University of Hawaii, United States; and International Tribunal for the Law of the Sea, Germany.

[54] Further information on the fellowship programme can be obtained from the web site of the Division for Ocean Affairs and the Law of the Sea at www.org/Depts/los.

[55] For details of 2003 award, see press release SEA/1791.

[56] For a list of the members of the Advisory Panel, see press release SEA/1791.

[57] Not including 2003 interest income and the second contribution of $50,000 made in March 2004.

[58] See report of the twenty-second session of the IOC Assembly (Paris, 24 June-2 July 2003), IOC document XXII/3, pp. 43-46.

[59] See Ibid., p. 45, and resolution XXII-13.

[60] Note 52 supra, p. 46

[61] See IOC-XXII/Inf.4.

[62] See A/57/57/Add.1, para. 52.

[63] See report VI(1) on "Conditions of work in the fishing sector" on the web site of ILO at www.ilo.org/public/english/standards/relm/ilc/ilc92/pdf/rep-v-1.pdf.

[64] ILO document MELSFS 2003/4.

[47] GB.288/LILS/9. The report of the meeting is also available at www.ilo.org/public/english/standards/relm/ilc/ilc92/reports.htm.

[48] Heavy grade oils are defined as: (a) crude oils having a density at 15° C higher than 900 kg/m3; (b) fuel oils having either a density at 15° C higher than 900 kg/m3 or a kinematic viscosity at 50° C higher than 180 mm 2/s; or (c) bitumen, tar and their emulsions.

[49] See web site of OECD Nuclear Energy Agency: www.nea.Fr.

[50] Speech by William O'Neill at the "Maritime Cyprus 2003" Conference, 22 September 2003, available on the web site of IMO at www.imo.org, and opening address of William O'Neill to the IMO Assembly at its 23rd session, A 23/INF.6.

[51] The Guidelines were developed by International Chamber of Shipping, International Shipping Federation, the Baltic and International Maritime Council (BIMCO), the International Association of Dry Cargo Shipowners (INTERCARGO) and the International Association of Independent Tankowners (INTERTANKO) and are available at www.marisec.org/flag-performance.

[52] European Commisssion press release IP/03/1547, dated 14 November 2003, available on the web site of the European Union at www.europa.eu.int.

[53] For the text of the Code adopted by the Tripartite Meeting of Experts on Security, Safety and Health in Ports, December 2003, see document MESSHP/2003/14 on the web site of ILO.

[54] A.23/24/Add.1, para. 4, and COMSAR 8/INF.5.

[55] For the report of the 87th session of the Legal Committee, see IMO document LEG 87/17, sect. E.

[56] Ibid., para. 107.

[57] Australia, France, Germany, Italy, Japan, Netherlands, Poland, Portugal, Spain, United Kingdom and United States.

[58] The statement specifies that the expression "States or non-State actors of proliferation concern" generally refers to those countries or entities that the participants in the Initiative establish should be subject to interdiction activities because they are engaged in proliferation through: (a) efforts to develop or acquire chemical, biological or nuclear weapons and associated delivery systems; or (b) transfers (either selling, receiving or facilitating) of weapons of mass destruction, their delivery systems or related materials.

[59] The complete text of the statement is available at www.dfat.gov.au/globalissues/psi/psi_statement.html.

[60] International Chamber of Commerce (ICC), International Maritime Bureau, Annual report of incidents of piracy and armed robbery against ships (1 January-31 December 2003).

[61] Ibid., see also "A new brand of piracy threatens oil tankers in Malacca Straits", ICC Commercial Crime Services web site: www.iccwbo.org/ccs/news_archives/2003/piracy-Oct-2003.asp.

[62] General Assembly resolution 55/25, annex I.

[63] Ibid., annex III.

[64] See *Official Record of the United Nations Conference for the Adoption of a Convention against Illicit Traffic in Narcotic Drugs and Psychotropic Substances, Vienna, 25 November-20 December 1998*, vol. I (United Nations publication, Sales No. E.94.XI.5).

[65] Of particular concern during the negotiations was the inclusion of vessels ("mother ships") that transport smuggled migrants on open ocean voyages, but which are sometimes not apprehended until after the migrants have been transferred to smaller local vessels. See the interpretative notes for the official records of the negotiations of the Convention and the Protocols, A/55/383/Add.1.

[64] The Co-Chairs' Statement at the end of the Ministerial Conference is available on the web site of the Embassy of the Republic of Indonesia in Australia at: www.kbri-canberra.org.au/press/press0704.file.htm.

[65] See *Official Records of the Economic and Social Council, 2003, Supplement No. 8* (E/2003/28/Rev.1), chap. XII.

[66] See *Official Records of the General Assembly, Twentieth Special Session, Supplement No. 3* (A/S-20/14).

[67] See E/CN.7/2003/2/Add.3.

[68] The phase-out date for category 2 and 3 tankers delivered on 5 April 1977 or earlier is 5 April 2005; for ships delivered after 5 April 1977 but before 1 January 1978, the phase-out date is 2005; for ships delivered in 1978 and 1979, the date is 2006; for ships delivered in 1980 and 1981, the date is 2007; for ships delivered in 1982, it is 2008; for ships delivered in 1983, it is 2009; and for ships delivered in 1984 or later, it is 2010.

[69] See LEG 87/17, paras. 194-205.

[70] See MEPC 51/8/1.

[71] MEPC 51/8.

[72] Further information on GloBallast is available at the IMO web site at www.imo.org.

[73] *Channel One TV*, Moscow, 17 January 2004, reported by the BBC.

[74] More information on the work of the Helsinki Commission in this field can be found at www.helcom.fi/pollution/chemicalmunitions.html.

[75] The Intergovernmental Panel on Climate Change, at its twentieth session (Paris, 19-21 February 2003), decided to prepare a special report on carbon dioxide capture and storage, to be finalized in 2005, which will include information on ocean storage formation and capacity, site selection and performance assessment, injection technology, monitoring technologies, verification, environmental impacts and risks (e.g. leakage), legal issues and public acceptance, and costs.

[76] See A/58/65, para. 167.

[77] See ILO, Draft Guidelines on Safety and Health in Shipbreaking, available at www.ilo.org/public/english/protection/safework/sectors/shipbrk/draft_guide.pdf.

[78] *R (on the application of Gregan and others) v Hartlepool Borough Council*, [2003] All ER (D) 258 (Dec); and *Friends of the Earth v Environment Agency and others*, [2003] All ER (D) 140 (Dec).

[79] The Code is available at www.marisec.org/resources/shiprecylingcode.pdf.

[80] For further details, see A/58/65, para. 169.

[81] For a report of the meeting, see Basel Convention document UNEP/CHW/GEWG/3/9.

[82] FAO Fisheries Department, *The State of World Fisheries and Aquaculture, 2002* (Rome, FAO, 2002), pp. 22-23.

[83] C. Fontaubert, J. Lutchman, D. Downes and C. Deere, *Achieving Sustainable Development: Implementing the New International Legal Regime* (Gland, Switzerland, IUCN, 2003), pp. 1-2.

[84] *The State of World Fisheries and Aquaculture*, supra note 101, p. 111.

[85] G. Bruntland, *Our Common Future: World Commission on Environment and Development* (Oxford, United Kingdom: Oxford University Press, 1987), p. 43.

[86] Progress Report on the Implementation of the International Plan of Action to Prevent, Deter and Eliminate Illegal, Unreported and Unregulated Fishing, Thirty-second Session, FAO Conference, Rome, 29 November-10 December 2003, document C 2003/21, para. 3.

[97] A Global Review of Illegal, Unreported and Unregulated (IUU) Fishing, K. Bray, FAO Fisheries Department, FAO document, AUS:IUU/200/6, available at http://www.fao.org/DOCREP/005/Y3274E/y3274e08.htm.

[98] In November 2003, a workshop was held in Kariba, Zimbabwe.

[99] *Report of the World Summit on Sustainable Development, Johannesburg, South Africa, 26 August-4 September 2002* (United Nations publication, Sales No. E.03.II.A.1 and corrigendum), chap. 1, resolution 2, annex, para. 31 (d).

[100] FAO Fisheries Report No. 615, Report of the Technical Consultation on the Measurement of Fishing Capacity, Mexico City, Mexico, 29 November- 3 December 1999, document FIPP/R615 (En), para. 36.

[101] FAO Fisheries Technical Paper 445, Measuring Capacity in Fisheries, The Measurement and Monitoring of Fishing Capacity: Introduction and Major Considerations, D. Gréboval (FAO, Rome, 2003), p. 5.

[102] See FAO Fisheries Department — Glossary, www.fao.org/fi/glossary.

[103] FAO Fisheries Report No. 638, Supplement (FIPP/R638 Suppl.), Papers presented at the Expert Consultation on Economic Incentives and Responsible Fisheries, Rome, 28 November-1 December 2000 (Rome, FAO, 2001), p. 3.

[104] FAO Fisheries Report No. 638 (FIPP/R638), Report of the Expert Consultation on Economic Incentives and Responsible Fisheries, Rome, 28 November-1 December 2000 (Rome, FAO, 2000), paras. 12, 37.

[105] Evans and Granger, "Gathering data for resource monitoring and fisheries management" In P. J. B. Hart and J. D. Reynolds, eds. *Handbook of fish biology and fisheries* (Oxford, United Kingdom: Blackwell, 2002).

[106] *The State of World Fisheries and Aquaculture*, supra note 101, p. 59.

[107] Ibid., p. 7.

[108] Ibid., p. 65.

[109] FAO Fisheries Report No. 680 (FIDI/R680 (Tri)), Report of the Technical Consultation on Improving Information on the Status and Trends of Capture Fisheries, appendix F, para. 14.

[110] FAO Fisheries Technical Paper 370, Bycatch Management and the Economics of Discarding (Rome, FAO, 1997), p. 1.

[111] *International Fisheries Instruments with Index* (United Nations publication, Sales No. E.98.V.11), sect. III, para. 8.5.

[112] General Assembly resolutions 49/118, 50/25, 51/36, 52/29, 53/33, 55/8, 57/142 and 58/14.

[113] *International Fisheries Instruments*, (supra note 120), sect. I, art. 5 (f).

[114] FAO Fisheries Technical Paper 370, supra note 119, p. 88.

[115] Ibid., p. 95.

[116] FAO Fisheries Technical Paper 313, Fishery Management Options for Lesser Antilles Countries, R. Mallon (Rome, FAO, 1990), p. 11.

[117] FAO Fisheries Report No. 548 (FIRI/R548), Report of the Expert Consultation on Small-Scale Rural Aquaculture, Rome, Italy, 28-31 May 1996, (Rome, FAO, 1997), p. 33.

[118] Ibid., p. 25.

[119] *The State of World Fisheries and Aquaculture*, supra note 101, p. 68.

[120] Ibid., pp. 2-19.

[121] Ibid., pp. 28-29.

[132] FAO Fisheries Report No. 661 (FIRI/R661 (En)), Conference on Aquaculture in the Third Millennium, (Rome, FAO, 2001), pp. 8-39.

[133] Ibid., p. 24.

[134] *The State of World Fisheries and Aquaculture*, supra note 101, pp. 26-27.

[135] Ibid., pp. 74-83. See also FAO Fisheries Circular No. 989 (FIRI/C989 (En)), Genetically Modified Organisms and Aquaculture (Rome, FAO, 2003), pp. 19-22, and *Financial Times*, 13 January 2004.

[136] D. Malakoff, "Deep-Sea Mountaineering", *Science*, vol. 301, 22 August 2003, pp. 1034-1037; see www.sciencemag.org.

[137] For example, pelagic armourheads, orange roughy, roundnose grenadiers, oreos, Patagonian toothfish and alfonsino.

[138] M. Lack, K. Short and A. Willock, "Managing risk and uncertainty in deep-sea fisheries: lessons from orange roughy", Joint Report by TRAFFIC Oceania and the WWF Endangered Seas Programme, 2003, p. 2.

[139] M. Gianni, Protecting the Biodiversity of Seamount Ecosystems in the Deep Sea — The Case for a Global Agreement for Marine Reserves on the High Seas, (Discussion paper for the IUCN/WWF High Sea Marine Protected Areas Workshop, 15-17 January 2002, Malaga, Spain; see also Malakoff, supra note 135, p. 1034; and J. Hall-Spencer, V. Allain and J. H. Fossa, "Trawling damage to Northeast Atlantic ancient coral reefs", The Royal Society, 2002, FirstCite e-publishing, 01PB0637 1-5.

[140] See Gianni, supra note 138.

[141] See decision UNEP/CBD/COP/VII/28.

[142] Report of the World Summit on Sustainable Development, Johannesburg, South Africa, 26 August-4 September 2002 (United Nations publication, Sales No. E.03.II.A.1 and corrigendum), chap. I, resolution 2, annex, para. 32 (a) and (c).

[143] See A/58/95, Part A, para. 20.

[144] General Assembly resolution 58/240, paras. 51 and 52.

[145] Ibid., para. 54.

[146] *Report of the World Summit on Sustainable Development, Johannesburg, South Africa, 26 August-4 September 2002* (United Nations publication, Sales No. E.03.II.A.1 and corrigendum), chap. I, resolution 2, annex.

[147] See A/58/95, Part A, para. 22.

[148] *The Status of Natural Resources on the High Seas* (Gland, Switzerland, WWF/IUCN, 2001), p. 22.

[149] See also A/58/65, para. 192.

[150] UNEP/WCMC, Deep Water Coral Reefs, October 2003, p. 5.

[151] ICRI CPC(2) 2003/summary record.

[152] Press release from the Marine Conservation Biology Institute and Oceana, 15 February 2004, http://www.mcbi.org/DSC_statement/sign.htm.

[153] For more information, see A/58/65, para. 181.

[154] S. K. Juniper, presentation to the twelfth Meeting of the States Parties to UNCLOS (see SPLOS/91).

[155] See UNEP/CBD/COP/5/INF/7.

[156] The Status of Natural Resources on the High Seas, supra note 145, p. 45.

[157] Ibid., p. 49.

[158] Ibid., p. 53.

[159] Report from an InterRidge Workshop, Institute of Ocean Sciences, Sidney (Victoria), B.C., Canada, 28-30 September 2000.

[160] UNU/Institute of Advanced Studies (AIS) report, The International Regime for Bioprospecting — Existing Policies and Emerging Issues for Antarctica, 2003. Antarctica, for example, has extremophiles that can stay alive at temperatures far below freezing.

[161] IUCN, Bioprospecting Marine Resources Conservation Concerns and Management Implications, January 2004.

[162] For further information, see http://134.102.240.35/public_html/wg-bio.htm.

[163] The findings reported in this section are contained primarily in the study prepared by the Secretariat of the Convention on Biological Diversity in cooperation with the Division for Ocean Affairs and the Law of the Sea, described in document UNEP/CBD/SBSTTA/8/INF/3/Rev.1.

[164] UNCLOS, article 87.

[165] See ibid., articles 137 and 140.

[166] Ibid., article 133 (a).

[167] Ibid., article 87 (1) (f).

[168] Ibid., article 256.

[169] Ibid., article 143 (1).

[170] Ibid., article 192.

[171] Ibid., article 194 (5).

[172] Ibid., article 196.

[173] Convention on Biological Diversity, article 10 (b).

[174] Ibid., article 8 (i).

[175] Ibid., article 1.

[176] Glaxo Wellcome Viridian, for example, was apparently reluctant to support some Antarctic bioprospecting activities due to the lack of clarity surrounding benefit-sharing. See UNU/AIS, The international regime for bioprospecting, supra note 158.

[177] UNCLOS, article 244.

[178] UNEP/CBD/COP/5/INF/7, para. 6.

[179] ISBA/6/A/18, annex.

[180] ISBA/9/A/5, paras. 41-43. The project is funded by the J. M. Kaplan Fund. Other participating institutions in the project are the British Natural History Museum, the Southampton Oceanography Centre (United Kingdom), JAMSTEC (Japan) and IFREMER (France).

[181] ISBA/9/C/4, para. 16.

[182] Ibid., para. 17.

[183] *Nature*, vol. 427, 8 January 2004, pp. 107-108.

[184] These risks include, inter alia, grid interaction, market access and regulatory risks. S. Shaw, M. J. Cremers and G. Palmiers, *Enabling Offshore Wind Developments* (Brussels, European Wind Energy Association (EWEA), 2002), p. 19.

[185] Ibid., p. 6.

[186] Wind Force 12, joint EWEA-Greenpeace report 2003, available at www.ewea.org/03publications/WindForce12.htm.

[187] Ministerial Declaration of the Fifth International Conference on the Protection of the North Sea, Bergen, Norway, 20-21 March 2002, chap. IX.

[188] See Bremen Statement, Ministerial Meeting of the OSPAR Commission, Bremen, Germany, 25 June 2003, para. 10 (a).

[189] Output from offshore installations is said to be up to 50 per cent higher than for comparable turbines on land. See http://hornsrev.dk/Engelsk/Projektet/uk-Projektet.htm.

[190] Wind energy already avoids over 6,200,000 tons of CO_2, 21,000 tons of SO_2 and 17,500 tons of NOx emissions per year in the European Union alone. See http://www.ewea.org/src/summary.htm.

[191] See resolution 7.5, "Wind Turbines and Migratory Species", Seventh Conference of the Parties to the Convention on Migratory Species, 2002, Proceedings, Part 1, annex IX, p. 10.

[192] Study on feasibility of and boundary conditions for floating offshore wind turbines, Delft University of Technology, the Netherlands, December 2002, available at www.offshorewindenergy.org/reports/drijfwind_report_public.pdf.

[193] J. Falnes and J. Løvseth, "Ocean wave energy", *Energy policy* (October 1991), p. 768.

[194] This compares to a worldwide installed capacity of 3.5 terawatts. See World Energy Council, *Renewable Energy Resources: Opportunities and Constraints 1990-2020* (1993).

[195] Increased wave activity is found between the latitudes of −30 and −60 on both hemispheres, induced by the prevailing western winds (westerlies) blowing in these regions. *Wave Energy Utilization in Europe: Current Status and Perspectives* (Pikermi, Greece: Centre for Renewable Energy Sources, 2002), p. 9.

[196] Hans Christian Soerensen, Lars Kjeld Hansen and Rune Hansen, Environmental Impact — Final Report, European Thematic Network on Wave Energy, NNE5-1999-00438.WP 3.3 (January 2003).

[197] It is generally acknowledged that to produce electricity cost-effectively from a tidal power scheme requires a minimum difference between high and low tides of 5 to 5.5 metres.

[198] Clive Baker, "Tidal power", in *Energy policy* (October 1991), p. 794. See also www.worldenergy.org/wec-geis/publications/reports/ser/tide/tide.asp.

[199] Information for this section of the report has been gathered mainly from a report of the Monterey Institute of International Studies on the Russian Floating Nuclear Reactors, published on 24 June 2002, and available at http://cns.miis.edu/pubs/week/020624.

[200] See World Nuclear Association, April 2003, www.world-nuclear.org.

[201] Ibid.

[202] Ibid.

[203] Ibid.

[204] Ibid.

[205] See also Nuclear Desalination of Sea Water, proceedings of 1997 Symposium (IAEA, 1997); Nuclear Heat Applications: Design Aspects and Operating Experience, IAEA-TECDOC-1056 (1998); P. J. Gopwin, T. Konishi and J. Kupitz, Nuclear and Fossil Seawater Desalination — General Considerations and Economic Evaluation (IAEA, November 1998); Konishi and Misra, Freshwater from the Seas, IAEA Bulletin 43/2/2001.

[206] See http://gashydrate.nrcan.gc.ca/mallik2002/home.asp.

[207] See http://www.ejbiotechnology.info/content/vol6/issue2/issues/1.

[209] See www.netl.doe.gov/scng/hydrate/about-hydrates/about_hydrates.html

[210] During discussion of the terms of reference, most participants preferred the name UN-Oceans

[211] A/58/65/Add.1, paras. 145-148

[212] A/58/423